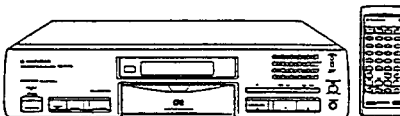


Service Manual

PIONEER®
The Art of Entertainment



ORDER NO.
ARP2765

COMPACT DISC PLAYER

PD-S602

PD-S602 HAS THE FOLLOWING:

Type	Power Requirement	Remarks
WEMXK	AC220 – 240V	
WBXK	AC220 – 240V	

- This manual is applicable to PD-S602/WEMXK and WBXK.

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SG MAY 1993 Printed in Japan

1. SAFETY INFORMATION

This service manual is intended for qualified service technicians; it is not meant for the casual do-it-yourselfer. Qualified technicians have the necessary test equipment and tools, and have been trained to properly and safely repair complex products such as those covered by this manual. Improperly performed repairs can adversely affect the safety and reliability of the product and may void the warranty. If you are not qualified to perform the repair of this product properly and safely, you should not risk trying to do so and refer the repair to a qualified service technician.

WARNING

Lead in solder used in this product is listed by the California Health and Welfare agency as a known reproductive toxicant which may cause birth defects or other reproductive harm (California Health & Safety Code, Section 25249.5).

When servicing or handling circuit boards and other components which contain lead in solder, avoid unprotected skin contact with the solder. Also, when soldering do not inhale any smoke or fumes produced.

NOTICE

(FOR CANADIAN MODEL ONLY)

Fuse symbols  (fast operating fuse) and/or  (slow operating fuse) on PCB indicate that replacement parts must be of identical designation.

REMARQUE

(POUR MODÈLE CANADIEN SEULEMENT)

Les symboles de fusible  (fusible de type rapide) et/ou  (fusible de type lent) sur CCI indiquent que les pièces de remplacement doivent avoir la même désignation.

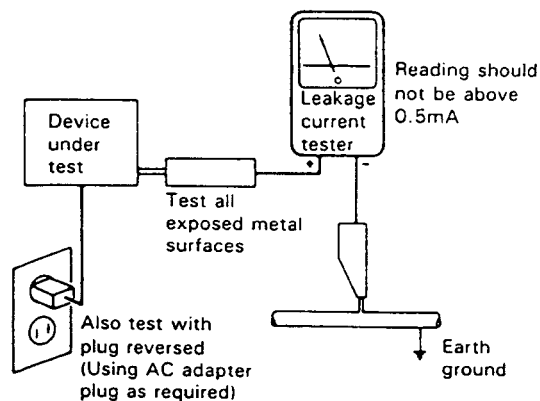
(FOR USA MODEL ONLY)

1. SAFETY PRECAUTIONS

The following check should be performed for the continued protection of the customer and service technician.

LEAKAGE CURRENT CHECK

Measure leakage current to a known earth ground (water pipe, conduit, etc.) by connecting a leakage current tester such as Simpson Model 229-2 or equivalent between the earth ground and all exposed metal parts of the appliance (input/output terminals, screwheads, metal overlays, control shaft, etc.). Plug the AC line cord of the appliance directly into a 120V AC 60Hz outlet and turn the AC power switch on. Any current measured must not exceed 0.5mA.



AC Leakage Test

ANY MEASUREMENTS NOT WITHIN THE LIMITS OUTLINED ABOVE ARE INDICATIVE OF A POTENTIAL SHOCK HAZARD AND MUST BE CORRECTED BEFORE RETURNING THE APPLIANCE TO THE CUSTOMER.

2. PRODUCT SAFETY NOTICE

Many electrical and mechanical parts in the appliance have special safety related characteristics. These are often not evident from visual inspection nor the protection afforded by them necessarily can be obtained by using replacement components rated for voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in this Service Manual.

Electrical components having such features are identified by marking with a Δ on the schematics and on the parts list in this Service Manual. The use of a substitute replacement component which does not have the same safety characteristics as the PIONEER recommended replacement one, shown in the parts list in this Service Manual, may create shock, fire, or other hazards.

Product Safety is continuously under review and new instructions are issued from time to time. For the latest information, always consult the current PIONEER Service Manual. A subscription to, or additional copies of, PIONEER Service Manual may be obtained at a nominal charge from PIONEER.

(FOR EUROPEAN MODEL ONLY)

VARO!

AVATTAESSA JA SUOJALUKITUS
OHITETTAESSA OLET ALTTIINA
NÄKYMÄTTÖMÄLLE LASERSÄTEILYLLE.
ÄLÄ KATSO SÄTEESEEN.

ADVERSEL:

USYNLIG LASERSTRÅLING VED ÅBNING
NÅR SIKKERHEDSAFBRYDERE ER UDE AF
FUNKTION UNDGA UDSÆTTELSE FOR
STRÅLING.

VARNING!

OSYNLIG LASERSTRÅLNING NÅR DENNA
DEL ÄR ÖPPNAD OCH SPÄRREN
ÄR URKOPPLAD. BETRakta EJ STRÅLEN.



LASER
Kuva 1
Lasersäteilyn
varoituserkki

WARNING!

DEVICE INCLUDES LASER DIODE WHICH
EMITS INVISIBLE INFRARED RADIATION
WHICH IS DANGEROUS TO EYES. THERE IS
A WARNING SIGN ACCORDING TO PICTURE
1 INSIDE THE DEVICE CLOSE TO THE LASER
DIODE.



LASER
Picture 1
Warning sign for
laser radiation

IMPORTANT

THIS PIONEER APPARATUS CONTAINS
LASER OF CLASS 1.
SERVICING OPERATION OF THE APPARATUS
SHOULD BE DONE BY A SPECIALLY
INSTRUCTED PERSON.

LASER DIODE CHARACTERISTICS

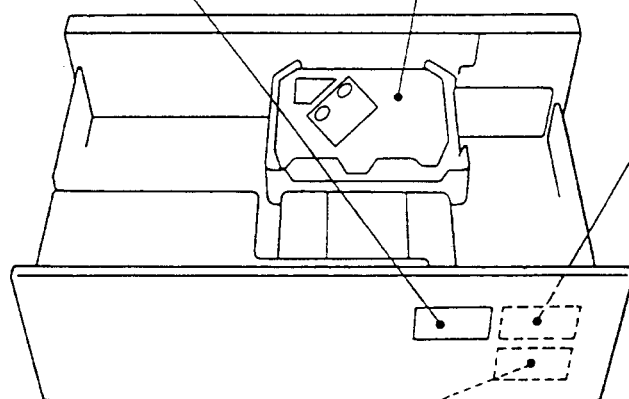
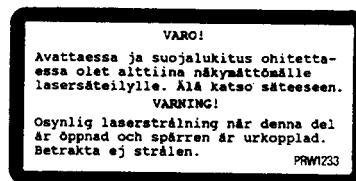
MAXIMUM OUTPUT POWER: 5 mw
WAVELENGTH: 780-785 nm

LABEL CHECK

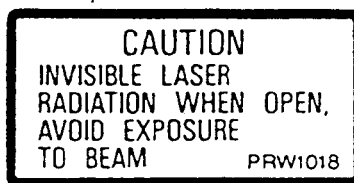
WBXK and WEMXK types



WEMXK type



WEMXK type



WBXK type

Additional Laser Caution

1. Laser Interlock Mechanism
The position of the switch (S601) for detecting loading completion is detected by the system microprocessor, and the design prevents laser diode oscillation when the switch (S601) is not in CLMP terminal side (when the mechanism is not clamped and CLMP signal is high level). Thus, the interlock will no longer function if the switch (S601) is deliberately set to CLMP terminal side (if CLMP signal is low level).
In the test mode* the interlock mechanism will not function.
Laser diode oscillation will continue, if pin 1 of M51593FP (IC101) on the preamplifier board loaded on pickup assembly are connected to GND, or pin 19 is connected to low level (ON), or else the terminals of Q101 are shorted to each other (fault condition).
2. When the cover is opened, close viewing of the objective lens with the naked eye will cause exposure to a Class 1 laser beam.

* Refer to page 26.

2. EXPLODED VIEWS, PACKING AND PARTS LIST

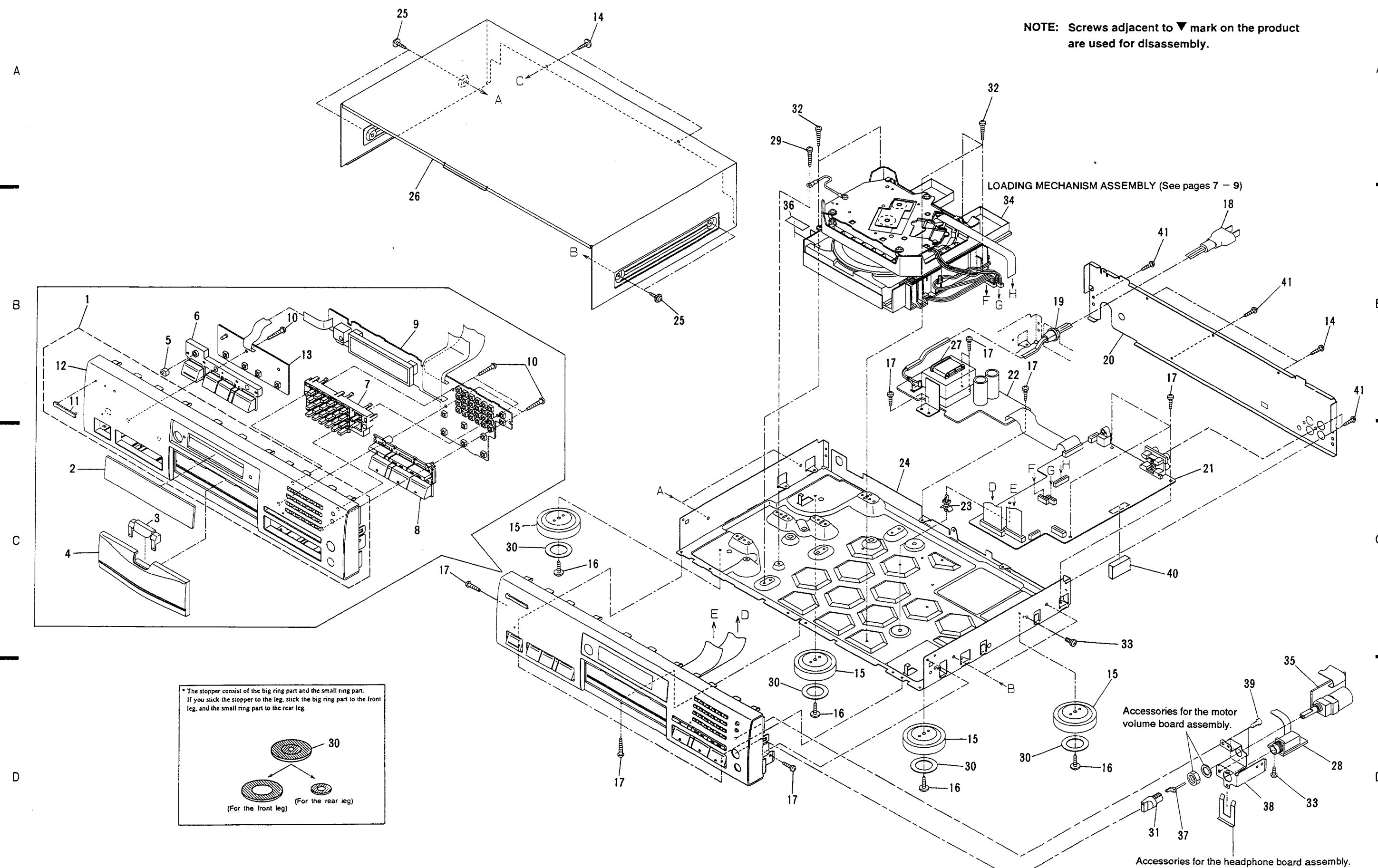
2.1 EXTERIOR

NOTES:

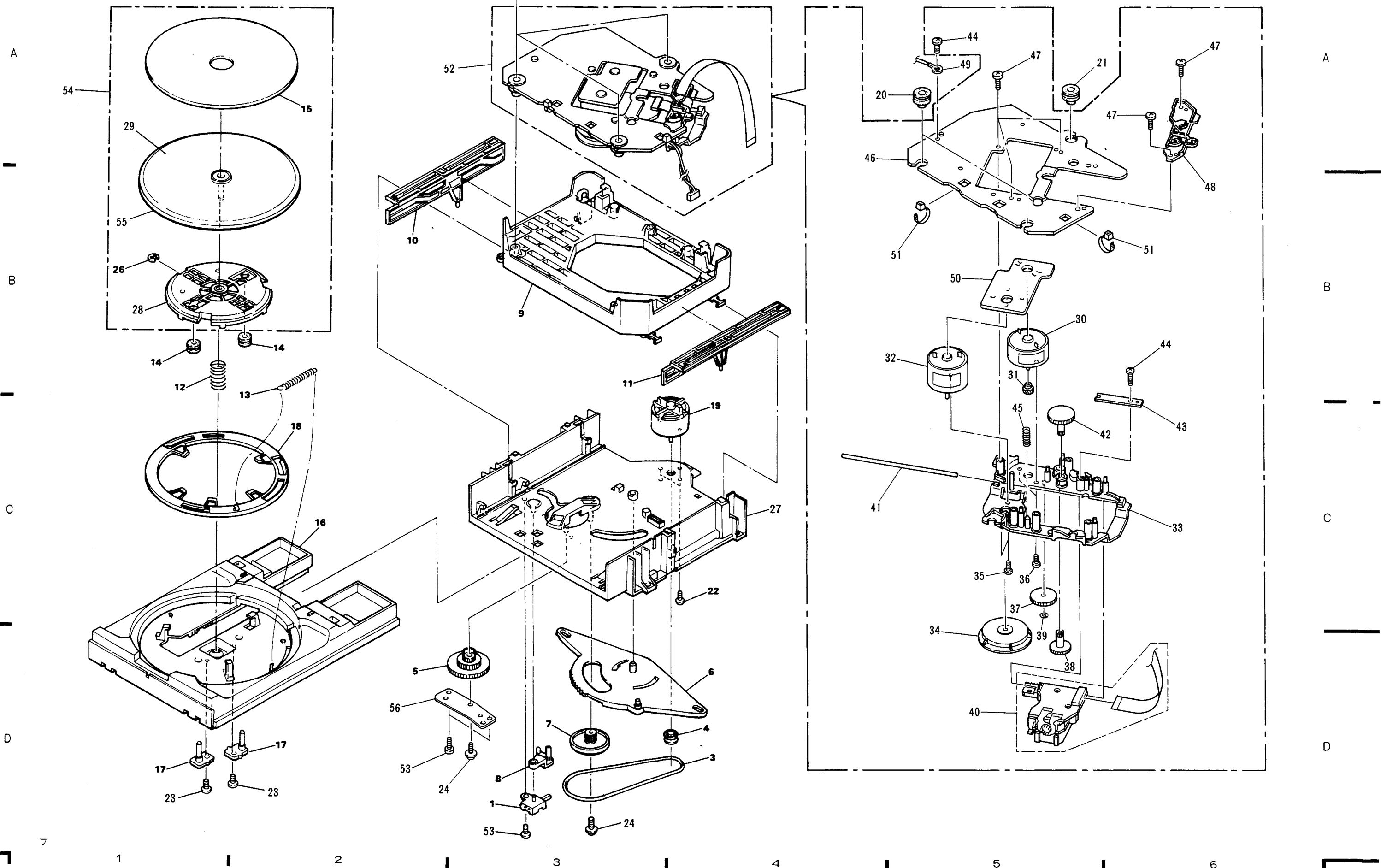
- Parts marked by “NSP” are generally unavailable because they are not in our Master Spare Parts List.
- The Δ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- Parts marked by “ $\odot$ ” are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.

Parts List

Mark	No.	Description	Part No.	Mark	No.	Description	Part No.
	1	Function panel assembly	PEA1262		36	Caution label	PRW1244
	2	Display window	PAM1625		37	H. P. Lens	PNW2157
	3	Tray lens	PNW2242	NSP	38	Headphone angle	PNB1434
	4	Tray name plate	PNW2244		39	Screw	PPZ30P050FMC
	5	LED lens	PNW2019	NSP	40	Spacer A	PEB1228
	6	Power button	PAC1712		41	Screw	BBT30P080FCC
	7	26key	PAC1715				
	8	Function button	PAC1713				
	9	FUNCTION board assembly	PWZ2489				
	10	Screw	PPZ30P150FMC				
	11	PIONEER badge	PAM1608				
	12	Function panel	PNW2246				
NSP	13	SW board assembly	PWZ2490				
	14	Screw	BBZ30P080FCC				
	15	Insulator	PNW1263				
	16	Screw	IBZ30P100FCC				
	17	Screw	BBZ30P060FCC				
Δ	18	AC power cord (WEMXK type)	PDG1003				
Δ	18	AC power cord (WBXK type)	VDG1051				
Δ	19	Strain relief	CM - 22B				
NSP	20	Rear base (WEMXK type)	PNA1925				
NSP	20	Rear base (WBXK type)	PNA1966				
Δ	21	MAIN board assembly	PWZ2480				
Δ	22	SERVO TRANS board assembly	PWZ2492				
NSP	23	PCB holder	PNW2100				
NSP	24	Under base	PNA1912				
	25	Screw	FBT40P080FZK				
	26	Bonnet	PYY1162				
Δ	27	Power transformer	PTT1236				
NSP	28	HEADPHONE board assembly	PWZ2481				
	29	Screw	PDZ30P050FMC				
	30	Stopper	PNM1070				
	31	Knob C	RAC1608				
	32	Screw	BSZ30P070FMC				
	33	Screw	IBZ30P060FCC				
NSP	34	Loading mechanism assembly	PXA1509				
NSP	35	Motor VR board assembly	PWZ2482				



2.2 LOADING MECHANISM ASSEMBLY



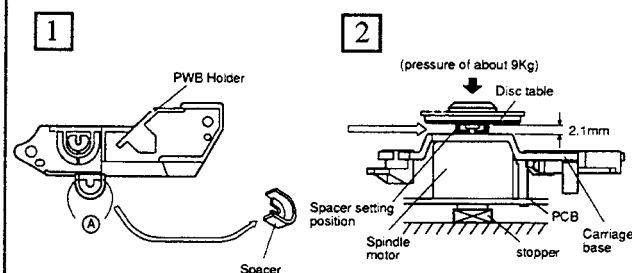
Parts List

Mark	No.	Description	Part No.	Mark	No.	Description	Part No.
	1	Lever switch (S601)	DSK1003	NSP	51	Cord clammer	PEC - 107
	2	Screw (steel)	PBA1027	NSP	52	Servo mechanism assembly	PXA1479
	3	Rubber belt	PEB1186		53	Screw	BPZ26P060FMC
	4	Motror pulley	PNW1634		54	Turn table assembly	PEA1165
	5	Drive gear	PNW1996	NSP	55	Table base assembly	PXA1382
	6	Synchro lever	PNW2168		56	Shaft holder	PNB1382
	7	Gear pulley	PNW1998				
	8	SW head	PNW1999				
	9	Float base	PNW2000				
	10	Left cam	PNW2001				
	11	Right cam	PNW2002				
	12	Compression spring	PBH1120				
	13	Tention spring	PBH1121				
	14	Float (rubber)	PEB1014				
	15	Table rubber sheet	PEB1181				
	16	Tray	PNW2003				
	17	Table guide	PNW2004				
	18	Lock plate	PNW2005				
	19	DC motor (LOADING)	PXM1010				
	20	Rubber bush	PEB1031				
	21	Rubber bush	PEB1170				
	22	Screw	BMZ26P040FMC				
	23	Screw	IPZ26P060FCU				
	24	Screw	IPZ20P080FMC				
	25						
NSP	26	Washer	YE20S				
NSP	27	Loading base	PNW1995				
NSP	28	Table bearing assembly	PXA1383				
NSP	29	Turn table (AL)	PNR1035				
	30	DC motor (CARRIAGE)	PXM1027				
	31	Pinion gear	PNW2055				
	32	DC motor assembly (SPINDLE) (with oil)	PEA1236				
	33	Carriage base	PNW2058				
	34	Disc table	PNW1067				
	35	Screw	JFZ20P030FNI				
	36	Screw	JFZ17P025FZK				
	37	Gear 3	PNW2054				
	38	Gear 2	PNW2053				
	39	Washer	WT12D032D025				
	40	Pickup assembly	PEA1179				
	41	Guide bar	PLA1094				
	42	Gear 1	PNW2052				
NSP	43	Gear stopper	PNB1303				
	44	Screw	BPZ20P060FMC				
	45	Spring	PBH1132				
NSP	46	Mechanism base	PNB1431				
	47	Screw	BPZ20P100FMC				
	48	PWB holder	PNW2057				
NSP	49	Earth lead unit	XDF - 503				
NSP	50	Mechanism board assembly	PWX1192				

•How to install the disc table

1 Use nipper or other tool to cut the two sections marked ① figure 1. Then remove the spacer.

2 While supporting the spindle motor shaft with the stopper, put spacer on top of the motor base and stick the disc table on top (takes about 9kg pressure). Take off the spacer.

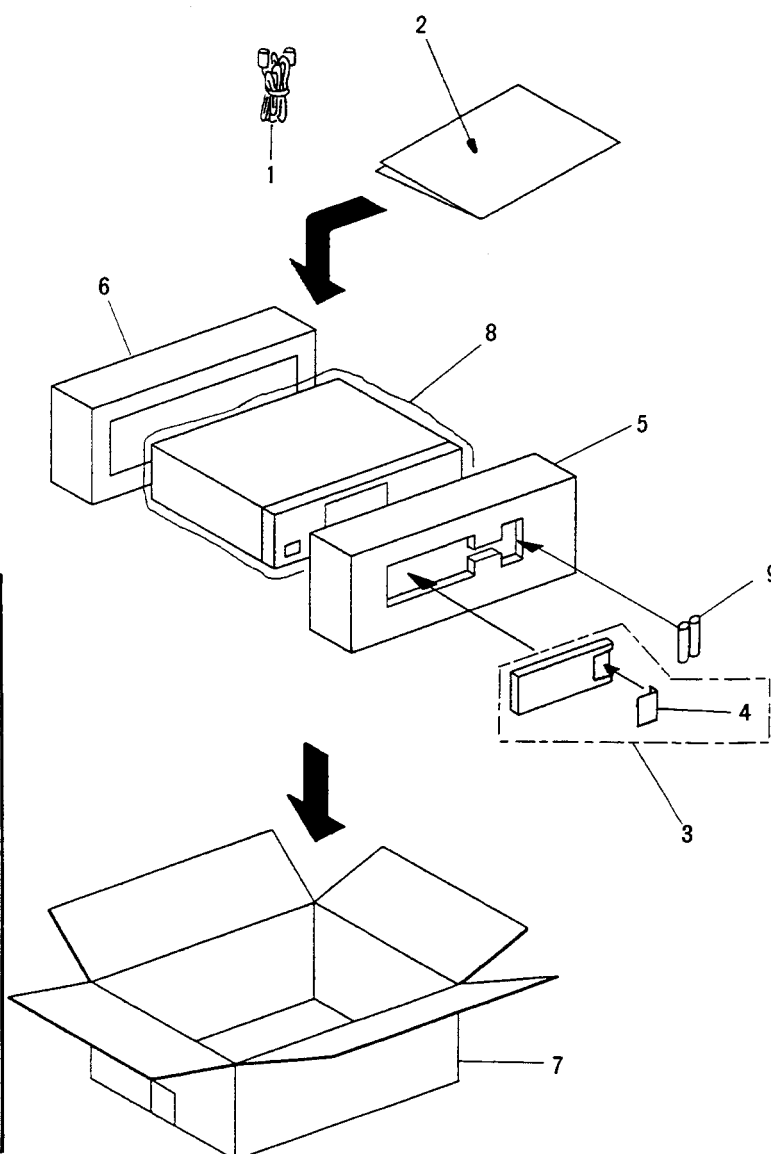


2.3 PACKING

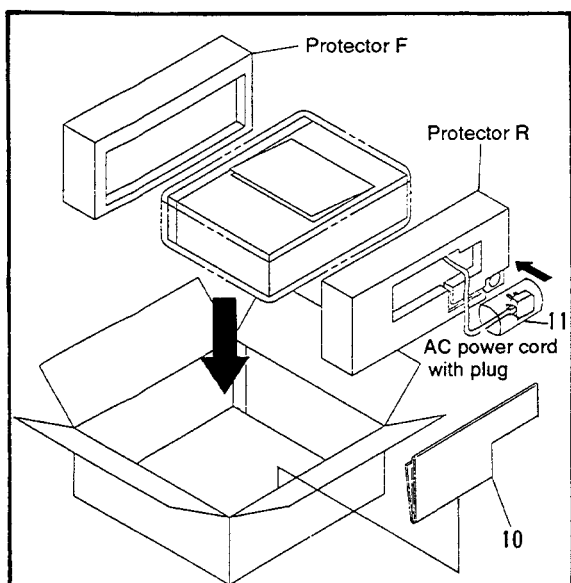
Parts List

Mark	No.	Description	Part No.
	1	Cord with pin plug	PDE1109
	2	Operating instructions (WEMXK type) (English/French/German/Italian /Dutch/Swedish/Spanish/Portuguese)	PRE1173
	2	Operating instructions (WBXK type) (English)	PRB1191
	3	Remote control unit	PWW1060
	4	Battery lid	PZN1001
	5	Protector F	PHA1237
	6	Protector R (WEMXK type)	PHA1261
	6	Protector R (WBXK type)	PHA1259
	7	CD packing case (WEMXK type)	PHG1873
	7	CD packing case (WBXK type)	PHG1933
	8	Sheet	Z23 - 007
NSP	9	Battery (R03, AAA)	VEM - 022
	10	Spacer (WBXK type only)	PHC1078
	11	Vinyl bag (WBXK type only)	Z21 - 013

● For WEMXK type



● For WBXK type



3. PCB PARTS LIST

NOTES:

- Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.
- The Δ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- Parts marked by "⊙" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.
- When ordering resistors, first convert resistance values into code form as shown in the following examples.

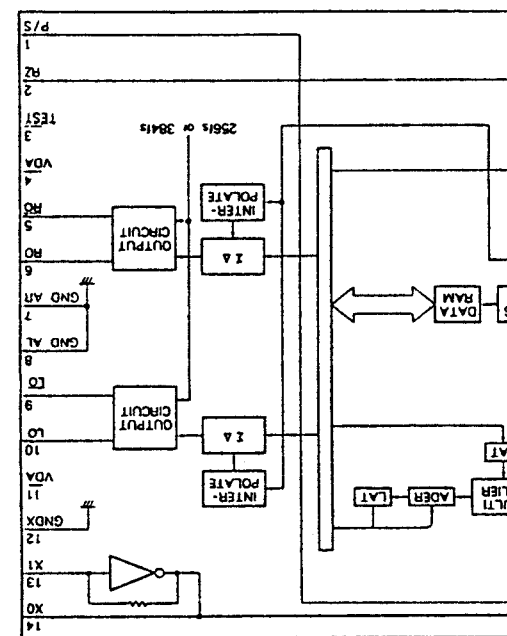
Ex.1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J=5%, and K=10%).

560 Ω $\rightarrow$ $56 \times 10^1 \rightarrow 561$ RD1/8PM $\begin{bmatrix} 5 & 6 & 1 \end{bmatrix}$ J
47k Ω $\rightarrow$ $47 \times 10^3 \rightarrow 473$ RD1/4PS $\begin{bmatrix} 4 & 7 & 3 \end{bmatrix}$ J
0.5 Ω $\rightarrow$ 0R5 RN2H $\begin{bmatrix} 0 & R & 5 \end{bmatrix}$ K
1 Ω $\rightarrow$ 010 RS1P $\begin{bmatrix} 0 & 1 & 0 \end{bmatrix}$ K

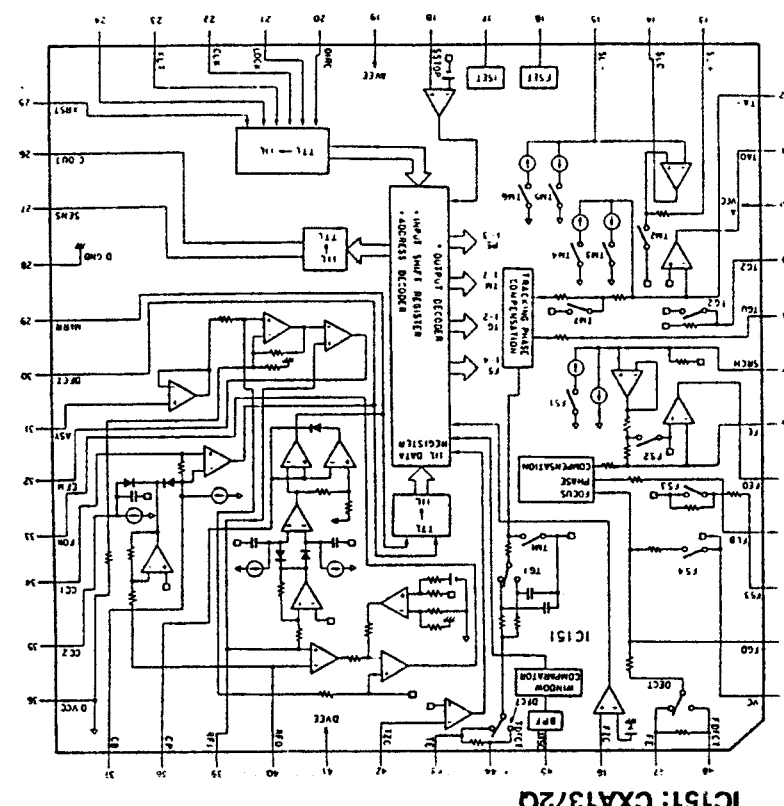
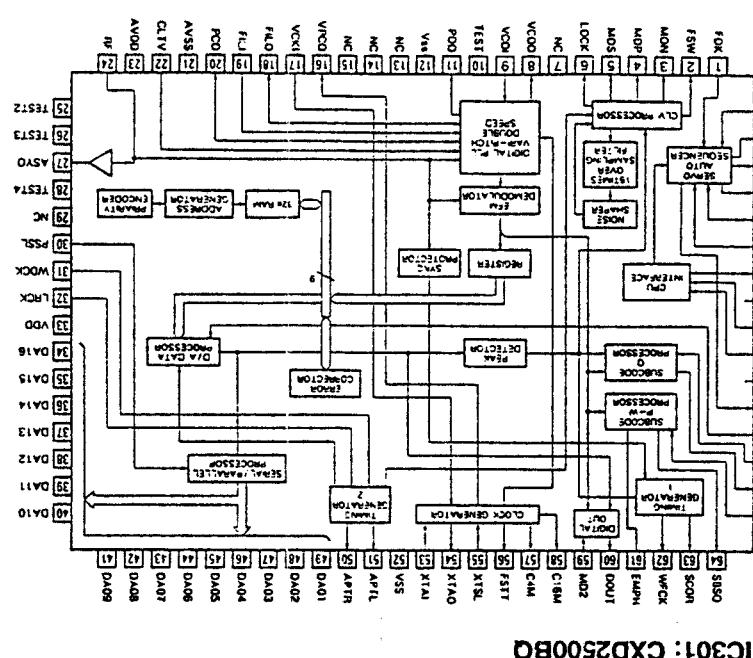
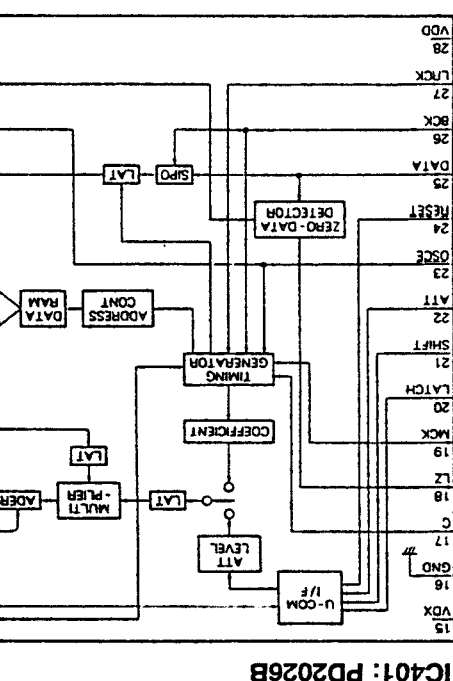
Ex.2 When there are 3 effective digits (such as in high precision metal film resistors).

5.62k Ω $\rightarrow$ $562 \times 10^1 \rightarrow 5621$ RN1/4PC $\begin{bmatrix} 5 & 6 & 2 & 1 \end{bmatrix}$ F

Mark	No.	Description	Part No.	Mark	No.	Description	Part No.
LIST OF ASSEMBLIES				C211, C212, C216, C217		CEAS330M16	
NSP Δ	MOTHER BOARD ASSEMBLY	PWM1761		C433, C434		CEAS470M50	
Δ	MAIN BOARD ASSEMBLY	PWZ2480		C302, C322, C351		CEAS471M6R3	
NSP	HEADPHONE BOARD ASSEMBLY	PWZ2481		C160, C162, C451, C452		CEAS4R7M50	
NSP	MOTOR VR BOARD ASSEMBLY	PWZ2482		C309		CEASR47M50	
NSP Δ	SUB BOARD ASSEMBLY	PWX1275		C413-C416		CFTXA104J50	
Δ	FUNCTION BOARD ASSEMBLY	PWZ2489		C441-C444		CFTXA152J50	
NSP	SW BOARD ASSEMBLY	PWZ2490		C406, C407		CFTXA471J50	
Δ	SERVO TRANS BOARD ASSEMBLY	PWZ2492		C152, C161, C321		CFTYA104J50	
NSP	MECHANISM BOARD ASSEMBLY	PWX1192		C157, C164, C169, C308		CGCYX103K25	
MAIN BOARD ASSEMBLY				C158, C159, C163, C230, C301		CGCYX104K25	
SEMICONDUCTORS				C156, C168		CGCYX333K25	
	IC151	CXA1372Q		C307, C354		CGCYX473K25	
	IC301	CXD2500BQ		C306		CKCYB152K50	
Δ	IC201, IC202	LA6520		C155		CKCYB182K50	
	IC421	LM2940CT-5.0		C218		CKCYB272K50	
	IC406	M5218AP		C170		CKCYB332K50	
	IC405	NJM5532DD		C171, C172		CKCYB472K50	
	IC401	PD2026B		C167, C205, C210, C215, C219, C303, C352, C353, C461		CKCYF103Z50	
	IC351	PD4457A		RESISTORS			
	Q391	2SC1740S		VR151, VR152 (22K)		RCP1046	
	Q403, Q404, Q453, Q454	2SD2144S		OTHER RESISTORS		RD1/6PM $\begin{bmatrix} \square & \square & \square & \square \end{bmatrix}$ J	
	Q451, Q452	DTA124ES		OTHERS			
	Q322, Q405, Q455, Q456	DTC124ES		CN131 CONNECTOR (12P)		12FM-1.0BT	
	D218, D351, D395-D397, D451-D454	1SS254		JA393 MINI JACK		PKN1005	
COILS				JA301 OPTICAL OUTPUT JACK		TOTX178	
	L301, L321, L395, L396, L415-L417	LAU010K		PIN JACK (4P)		DKB1016	
CAPACITORS				X401 CRYSTAL RESONATOR (16.9344MHz)		PSS1008	
	C435-C438	CCCCH050C50		X351 CERAMIC RESONATOR (4.19MHz)		VSS1014	
	C403	CCCCH120J50		HEADPHONE BOARD ASSEMBLY			
	C404	CCCCH220J50		COILS			
	C429, C430	CCCCH390J50		L501-L503		LAU010K	
	C151, C153	CEAS101M10		CAPACITORS			
	C431, C432	CEAS101M25		C501, C502		CKCYF103Z50	
	C405	CEAS102M16					



Mark	No.	Description	Part No.
	C503		CKCYF473Z50
OTHERS			
	JA501 HEADPHONE JACK		PKN1001
MOTOR VOLUME BOARD ASSEMBLY			
CAPACITORS			
	C510		CKPUYF103Z25
RESISTORS			
	VR501 (20KB)		PCS1010
FUNCTION BOARD ASSEMBLY			
SEMICONDUCTORS			
	D701-D710		1SS254
SWITCHES			
	S701-S704, S706, S708, S709, S712-S725, S728-S738		PSG1006
COILS			
	L701, L702		LAU010K
RESISTORS			
	ALL RESISTORS		RD1/6PM $\begin{bmatrix} \square & \square & \square & \square \end{bmatrix}$ J
OTHERS			
	V701 FL INDICATOR TUBE		PEL1073
	REMOTE SENSOR		SBX1610
SW BOARD ASSEMBLY			
SEMICONDUCTORS			
	D751		PCX1019
SWITCHES			
	S751-S754		PSG1006
SERVO TRANS BOARD ASSEMBLY			
SEMICONDUCTORS			
Δ	IC31		ICP-N10
Δ	IC22		NJM79L05A
Δ	IC20		PQ05RR12
Δ	D11-D14, D52		11ES2
	D54		MTZJ18B/C
CAPACITORS			
	C52		CEAS101M35
	C27, C28		CEAS471M6R3
	C25, C26		CEAS472M16
	C11-C13, C15, C16		CKCYF103Z50
RESISTORS			
	ALL RESISTORS		RD1/6PM $\begin{bmatrix} \square & \square & \square & \square \end{bmatrix}$ J
OTHERS			
Δ	TERMINAL		RKC-061
MECHANISM BOARD ASSEMBLY			
SWITCHES			
	S610		DSG1016



PD-S602

4. SCHEMATIC AND PCB CONNECTION DIAGRAMS

Note:

Type 4

1. When ordering service parts, be sure to refer to "PARTS LIST of EXPLODED VIEWS" or "PCB PARTS LIST".
2. Since these are basic circuits, some parts of them or the values of some components may be changed for improvement.
3. RESISTORS:
Unit: k: $k\Omega$, M: $M\Omega$, or Ω unless otherwise noted.
Rated power: 1/4W, 1/6W, 1/8W, 1/10W unless otherwise noted.
Tolerance: (F): $\pm 1\%$, (G): $\pm 2\%$, (K): $\pm 10\%$, (M): $\pm 20\%$ or $\pm 5\%$ unless otherwise noted.
4. CAPACITORS:
Unit: p:pF or μ F unless otherwise noted.
Ratings: capacitor (μ F)/ voltage (V) unless otherwise noted.
Rated voltage: 50V except for electrolytic capacitors.
5. COILS:
Unit: m:mH or μ H unless otherwise noted.
6. VOLTAGE AND CURRENT:
 : DC voltage (V) in PLAY mode unless otherwise noted.
 $\oplus$ mA or $-$ mA: DC current in PLAY mode unless otherwise noted.
Value in () is DC current in STOP mode.
7. OTHERS:
 - $\rightarrow$: Signal route.
 - $\odot$: Adjusting point.
 - ∇ : Measurement point.
 - The Δ mark found on some component parts indicates the importance of the safety factor of the parts. Therefore, when replacing, be sure to use parts of identical designation.

- 8. SWITCHES** (Underline indicates switch position):

FUNCTION BOARD ASSEMBLY

- ```

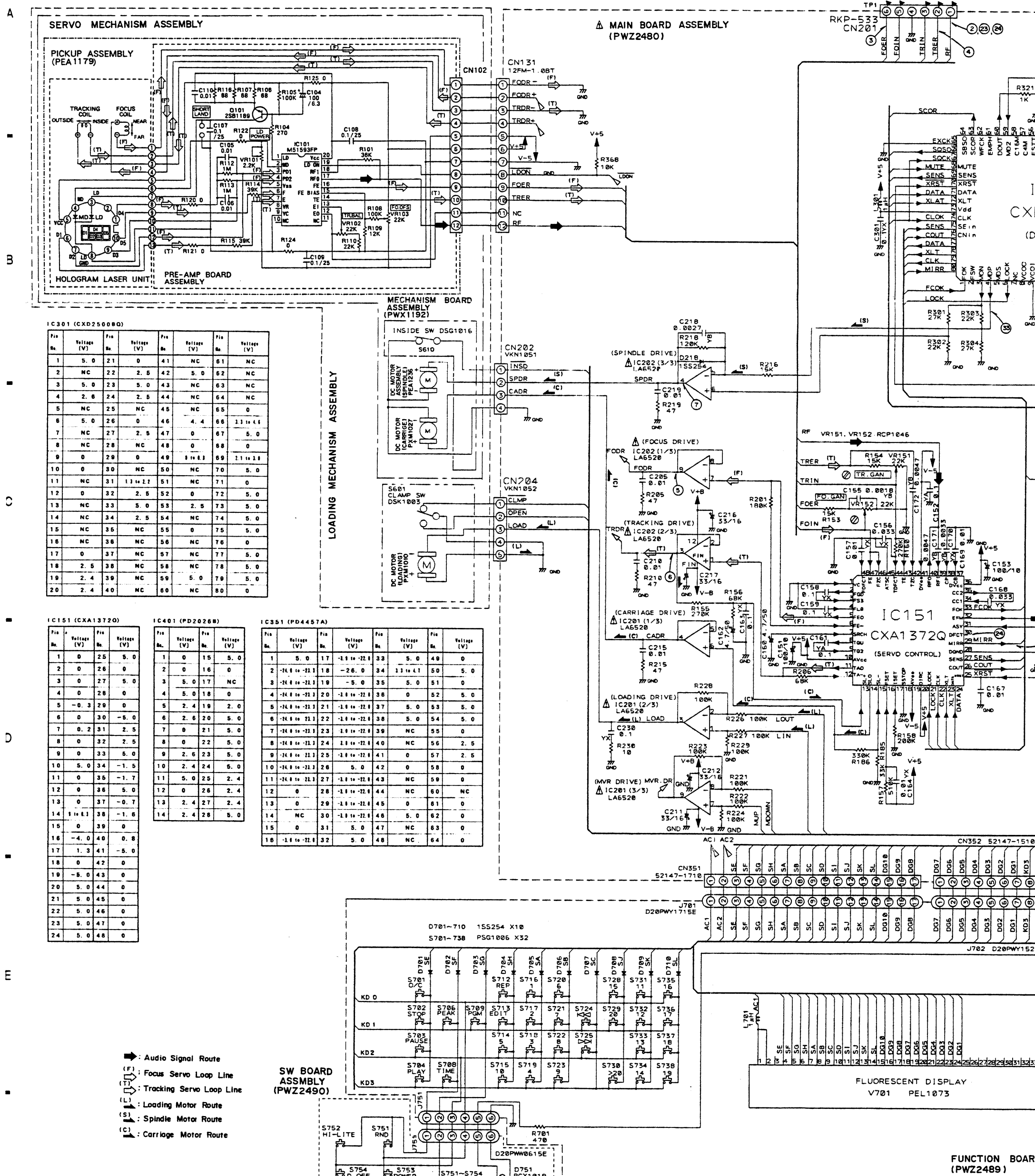
S701 : O/C
S702 : STOP
S703 : PAUSE
S704 : PLAY
S706 : PEAK
S708 : TIME
S709 : PGM
S712 : REP
S713 : EDIT
S714 : 5
S715 : 10
S716 : 1
S717 : 2
S718 : 3
S719 : 4
S720 : 6
S721 : 7
S722 : 8
S723 : 9
S724 : ⏮
S725 : ⏭
S728 : 15
S729 : 20
S730 : > 20
S731 : 11
S732 : 12
S733 : 13
S734 : 14
S735 : 16
S736 : 17
S737 : 18
S738 : 19

```

SW BOARD ASSEMBLY

- S751 : RND  
S752 : HI - LITE  
S753 : POWER  
S754 : D. OFF

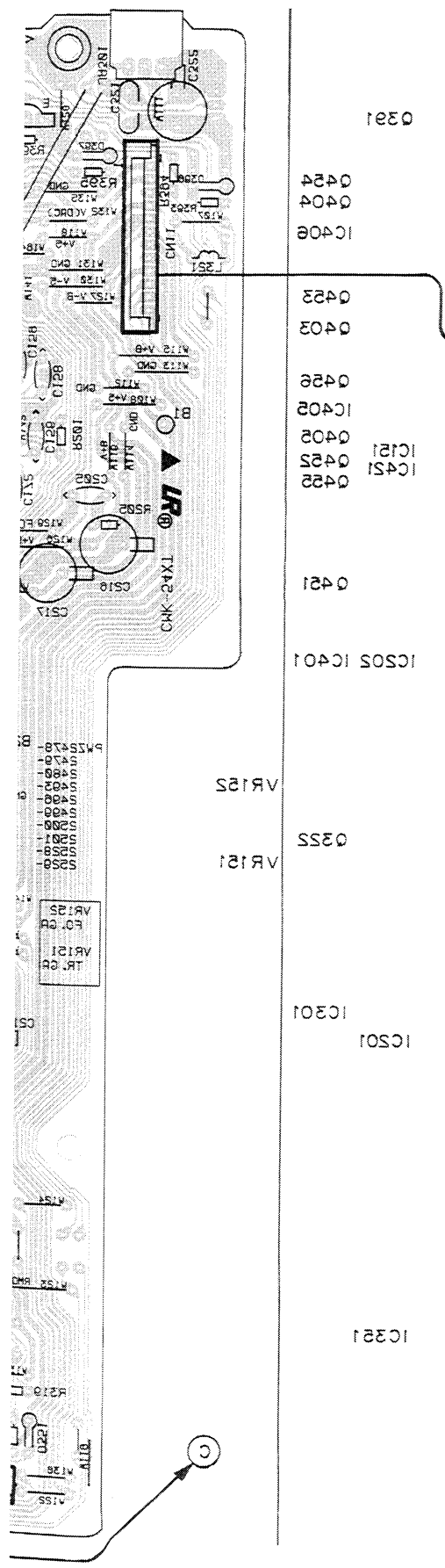
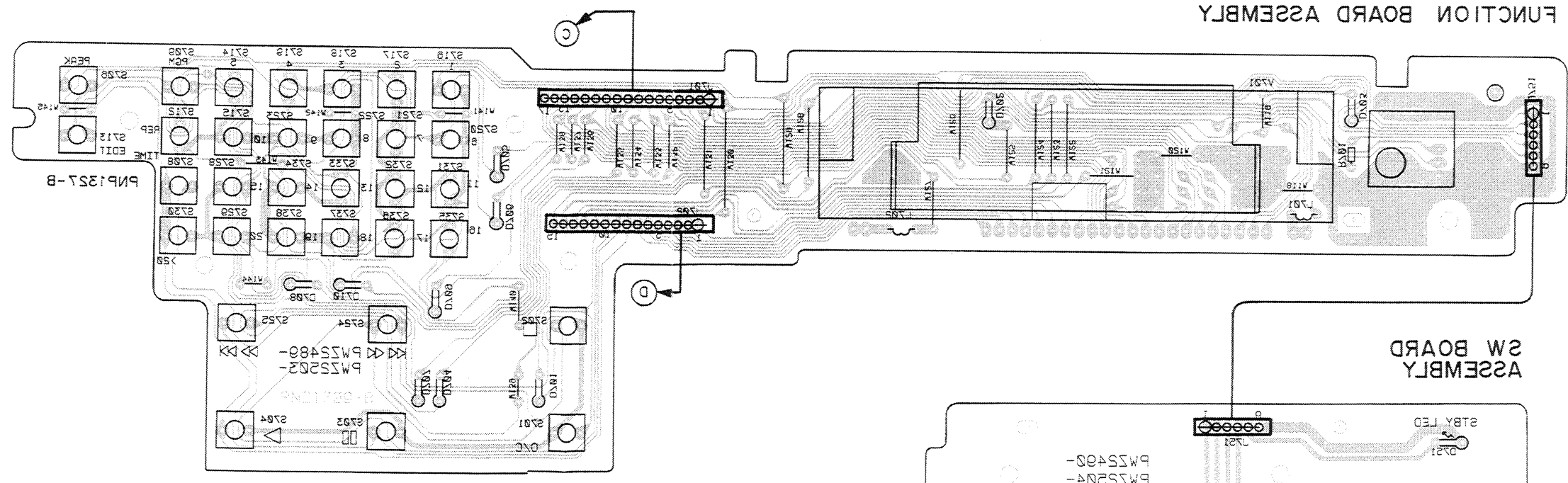
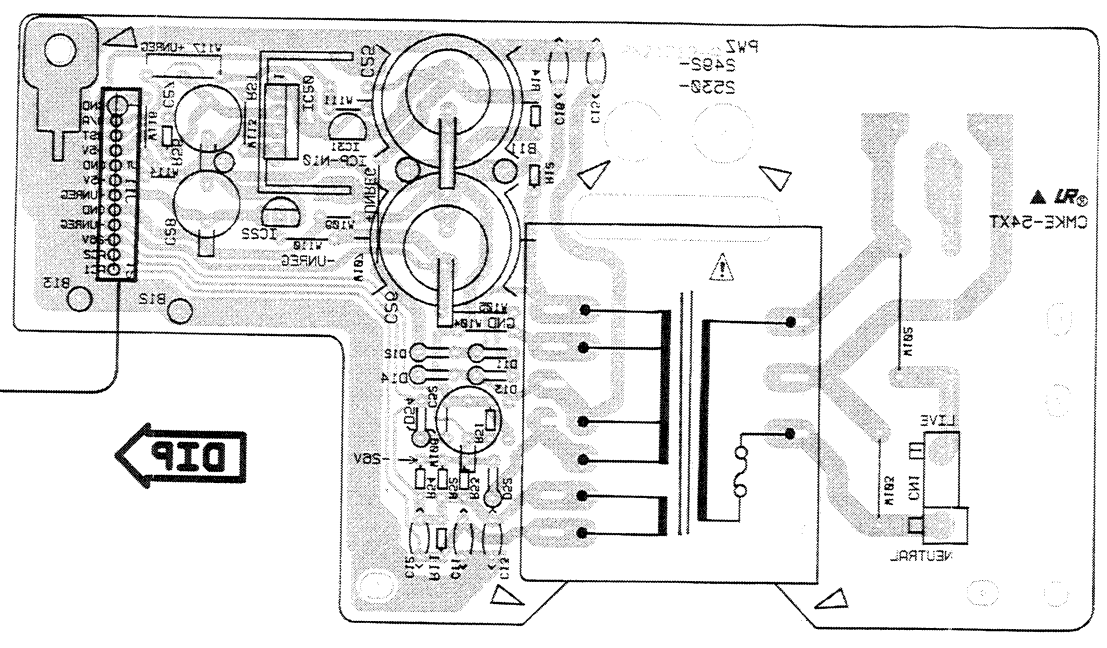
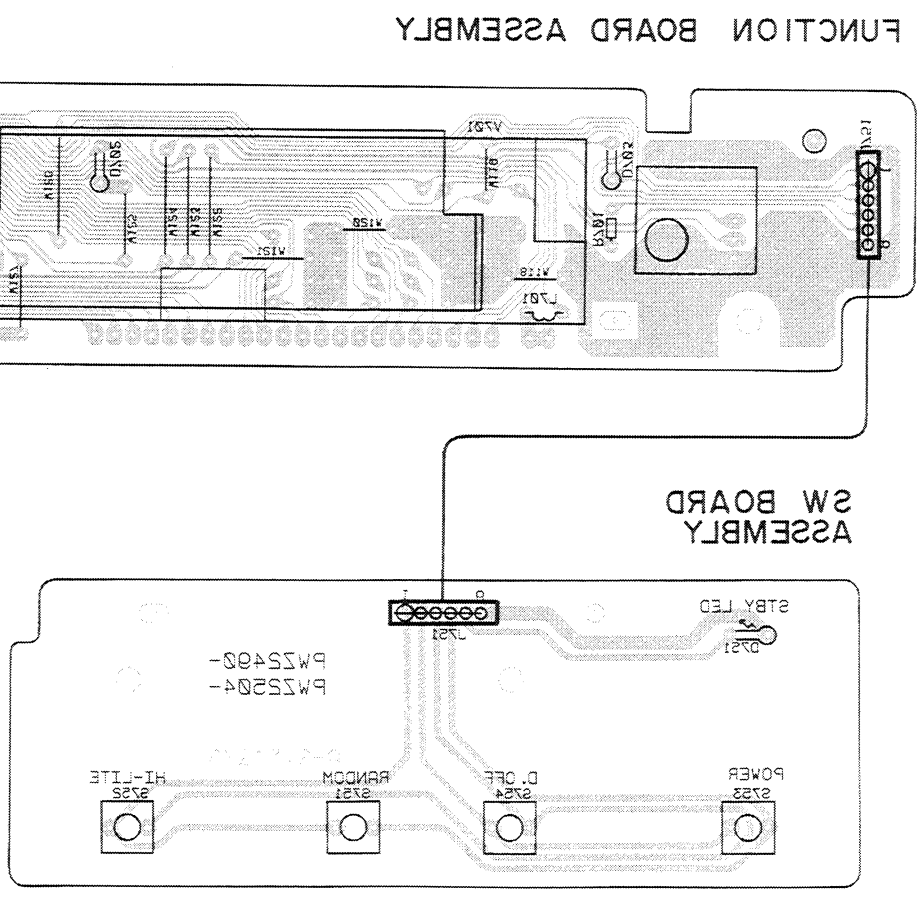
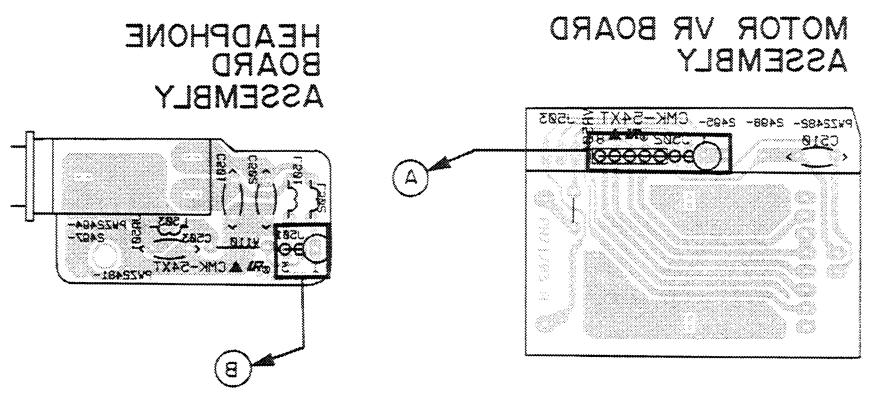
# 4.1 SCHEMATIC DIAGRAM







# 4.5 PCB CONNECTION DIAGRAM • View from soldering side



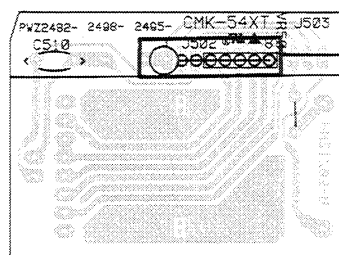
## 4.2 PCB CONNECTION DIAGRAM

- View from component side

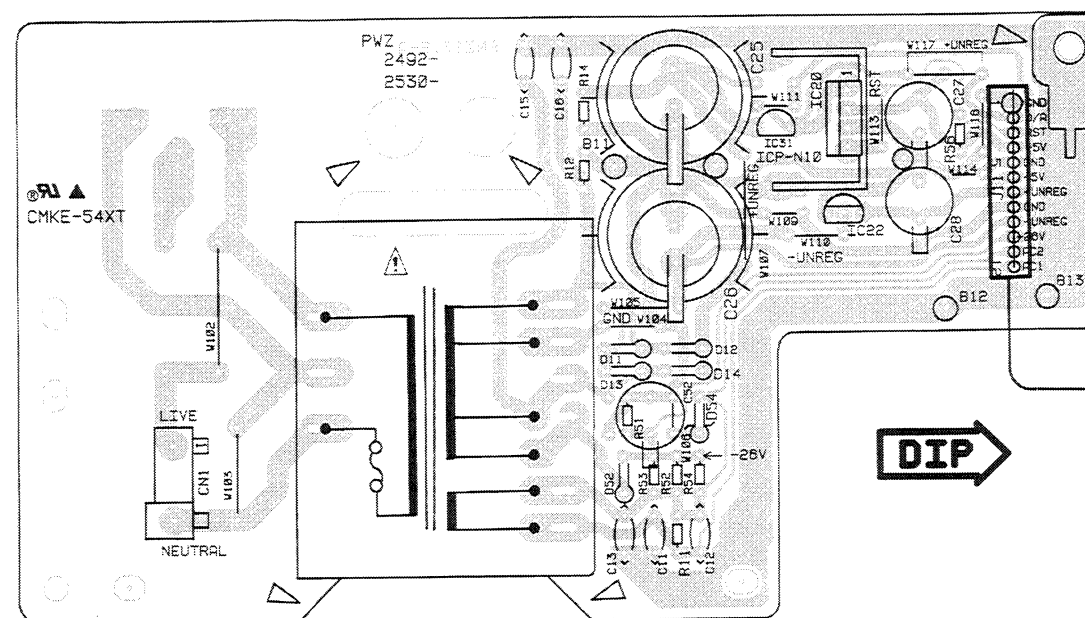
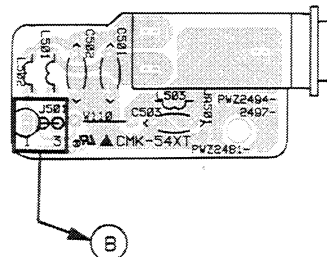
### SERVO TRANS BOARD ASSEMBLY

### MAIN BOARD ASS

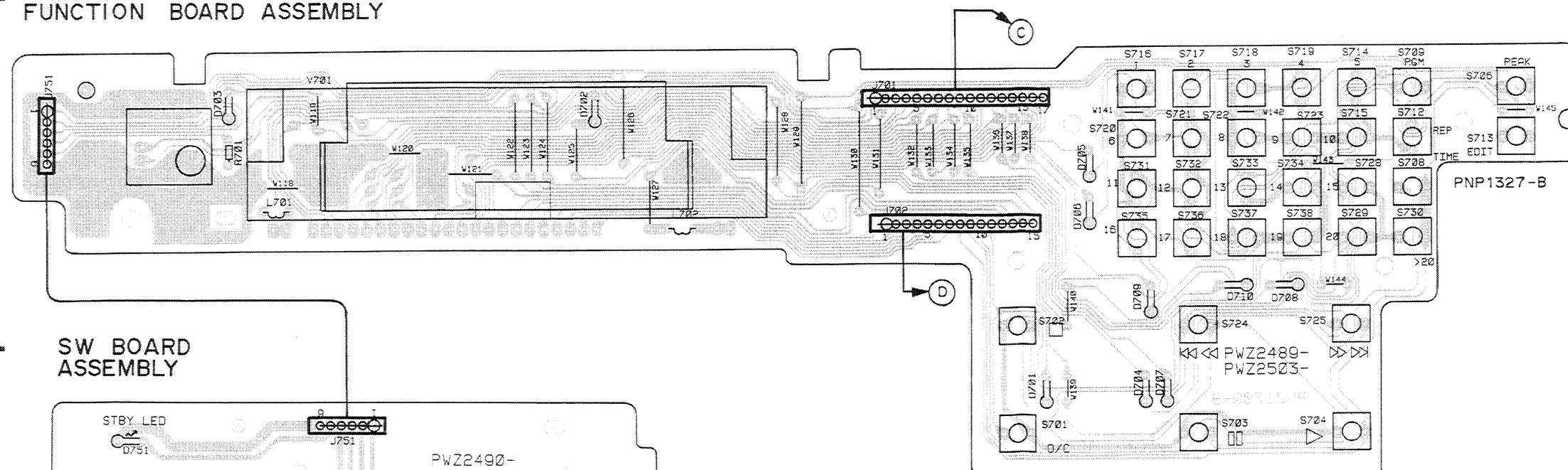
#### MOTOR VR BOARD ASSEMBLY



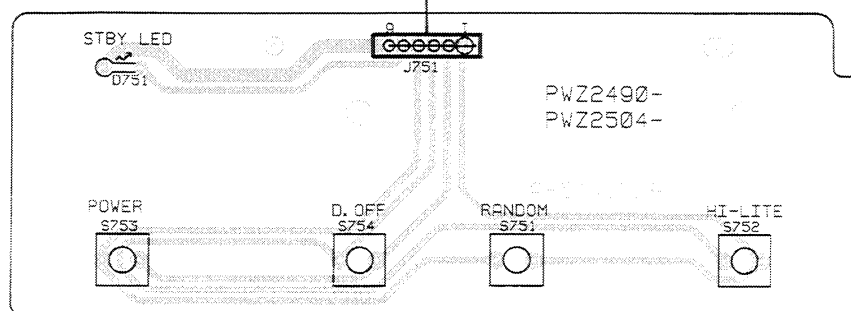
#### HEADPHONE BOARD ASSEMBLY



#### FUNCTION BOARD ASSEMBLY



#### SW BOARD ASSEMBLY



Q391  
Q454  
Q404  
IC406  
Q453  
Q403  
Q456  
IC405  
Q405  
Q452  
Q455  
IC151  
IC421

Q451  
IC202  
IC401

IC301  
IC201

IC351

VR152  
VR151

Q322

IC301

IC201

IC301

IC201

IC301

IC201

IC301

IC201

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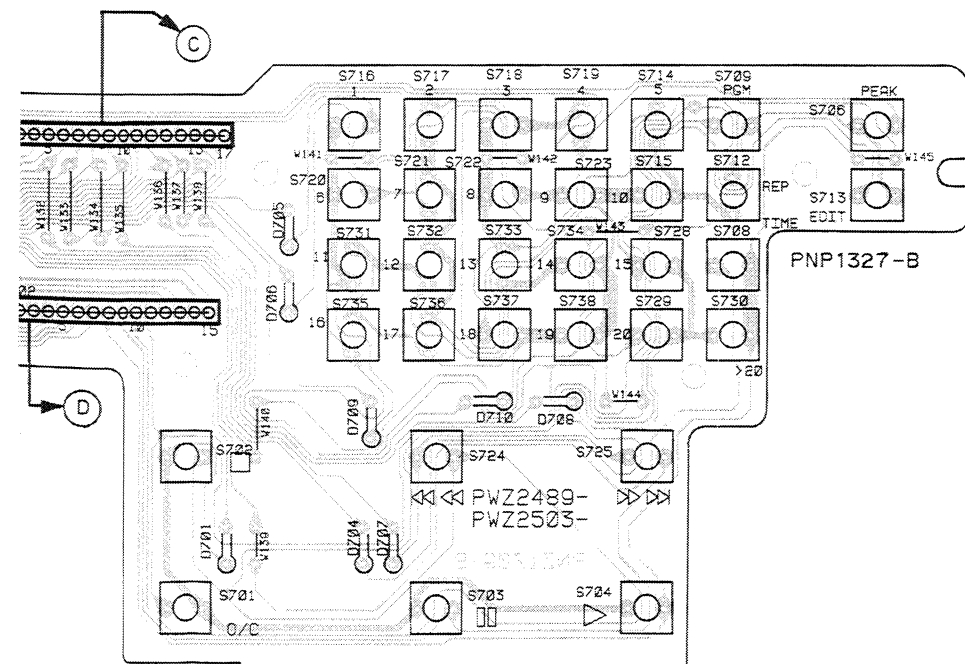
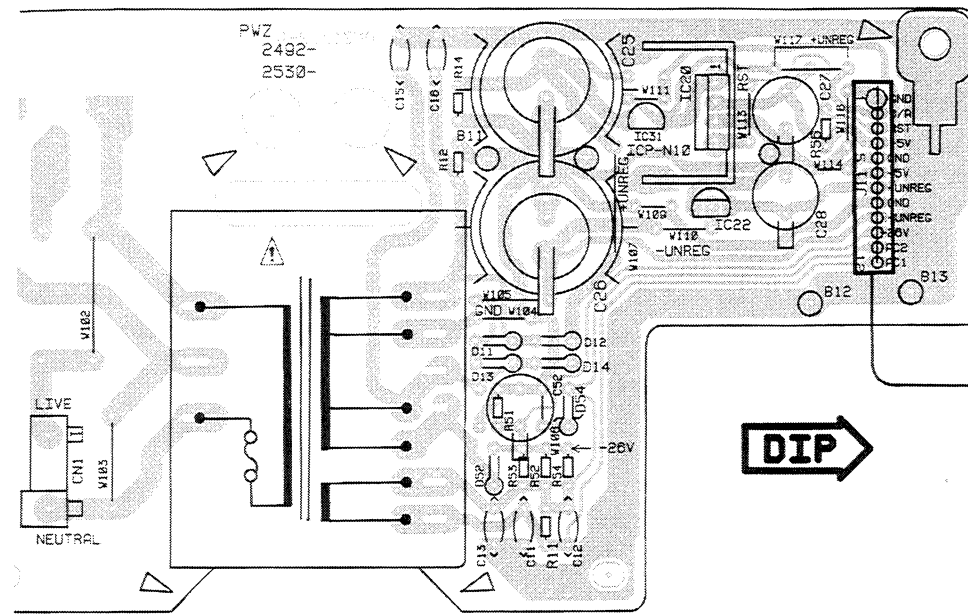
IC201

IC301

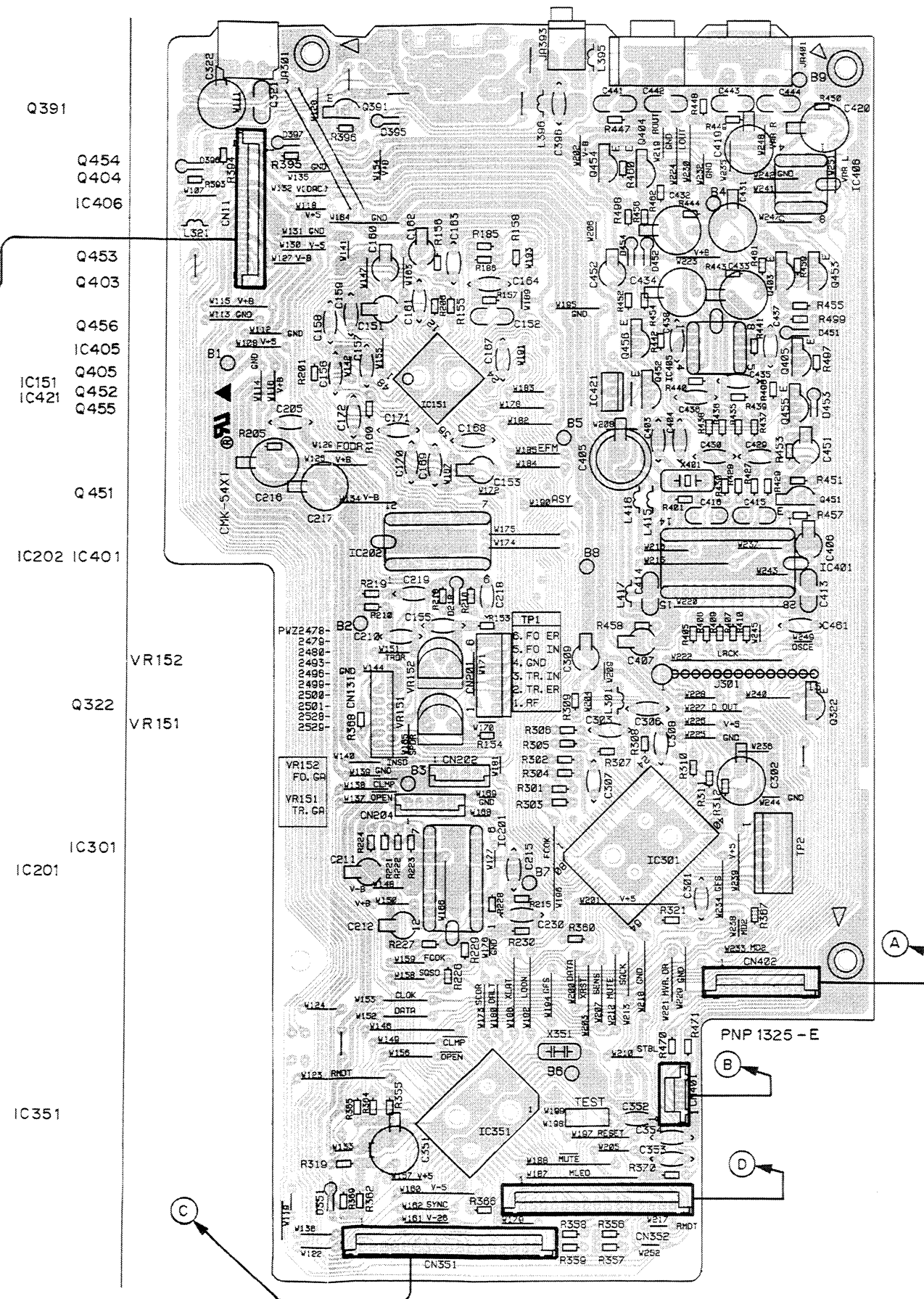
IC201

IC301

TRANS BOARD ASSEMBLY



# MAIN BOARD ASSEMBLY



| PCB pattern diagram indication | Corresponding part symbol | Part name                              |
|--------------------------------|---------------------------|----------------------------------------|
|                                |                           | Transistor                             |
|                                |                           | FET                                    |
|                                |                           | Diode                                  |
|                                |                           |                                        |
|                                |                           |                                        |
|                                |                           | Zener diode                            |
|                                |                           |                                        |
|                                |                           | LED                                    |
|                                |                           | Varactor                               |
|                                |                           | Tact switch                            |
|                                |                           |                                        |
|                                |                           | Inductor                               |
|                                |                           |                                        |
|                                |                           | Coil                                   |
|                                |                           |                                        |
|                                |                           | Transformer                            |
|                                |                           |                                        |
|                                |                           | Filter                                 |
|                                |                           |                                        |
|                                |                           | Ceramic capacitor                      |
|                                |                           |                                        |
|                                |                           |                                        |
|                                |                           | Mylar capacitor                        |
|                                |                           |                                        |
|                                |                           | Styrol capacitor                       |
|                                |                           |                                        |
|                                |                           |                                        |
|                                |                           | Electrolytic capacitor (Non polarized) |
|                                |                           |                                        |
|                                |                           |                                        |
|                                |                           | Electrolytic capacitor (Polarized)     |
|                                |                           |                                        |
|                                |                           | Electrolytic capacitor (Polarized)     |
|                                |                           |                                        |
|                                |                           | Power capacitor                        |
|                                |                           |                                        |
|                                |                           | Semi-fixed resistor                    |
|                                |                           |                                        |
|                                |                           | Resistor array                         |
|                                |                           |                                        |
|                                |                           |                                        |
|                                |                           | Resistor                               |
|                                |                           |                                        |
|                                |                           | Resonator                              |
|                                |                           |                                        |
|                                |                           | Thermistor                             |
|                                |                           |                                        |

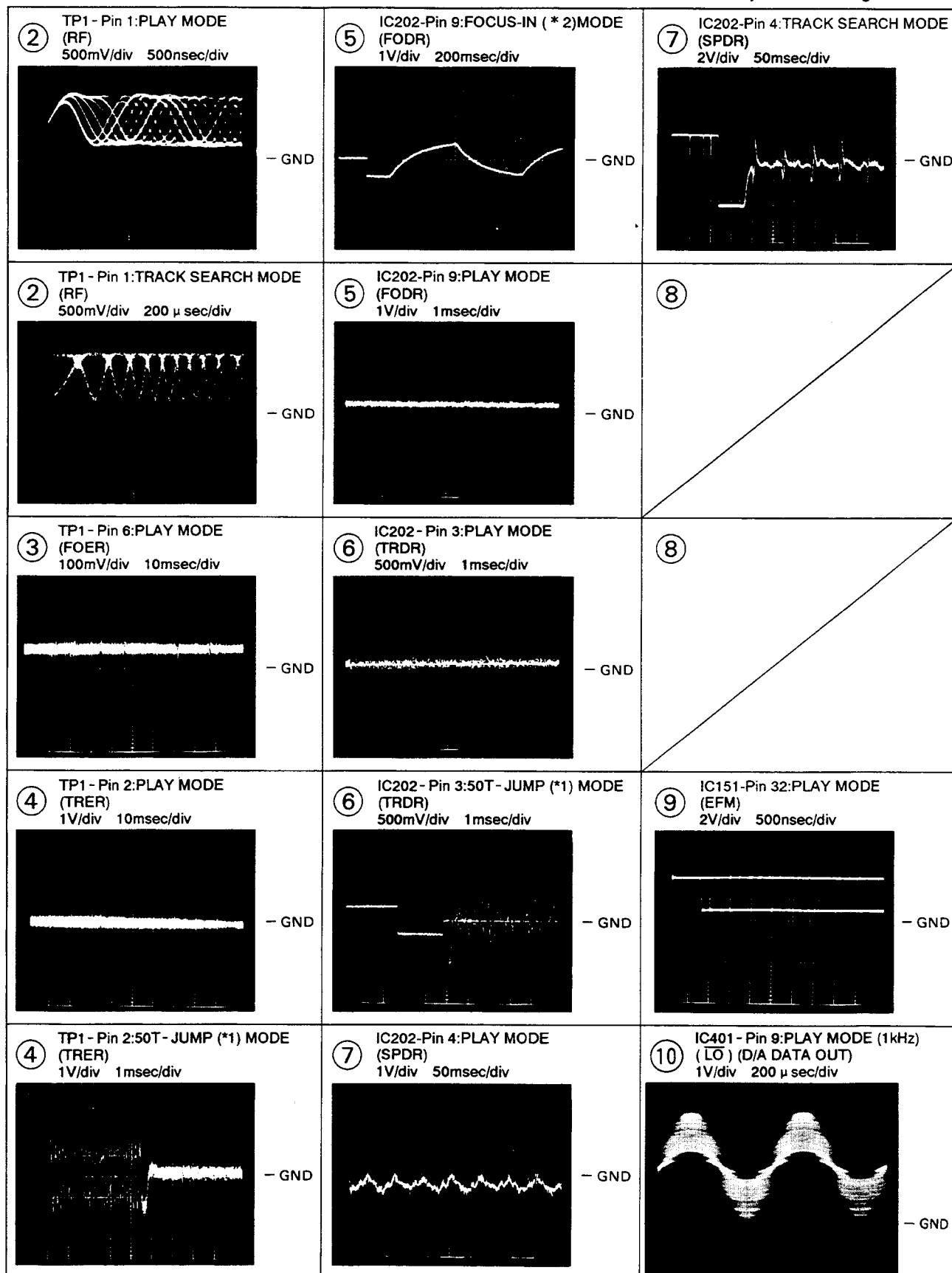
1. This P.C.B. connection diagram is viewed from the parts mounted side.
2. The parts which have been mounted on the board can be replaced with those shown with the corresponding wiring symbols listed in the above Table.
3. The capacitor terminal marked with  shows negative terminal.
4. The diode marked with  shows cathode side.
5. The transistor terminal marked with  shows emitter.

# ● WAVEFORMS

Note: The encircled numbers denote measuring points in the schematic diagram.

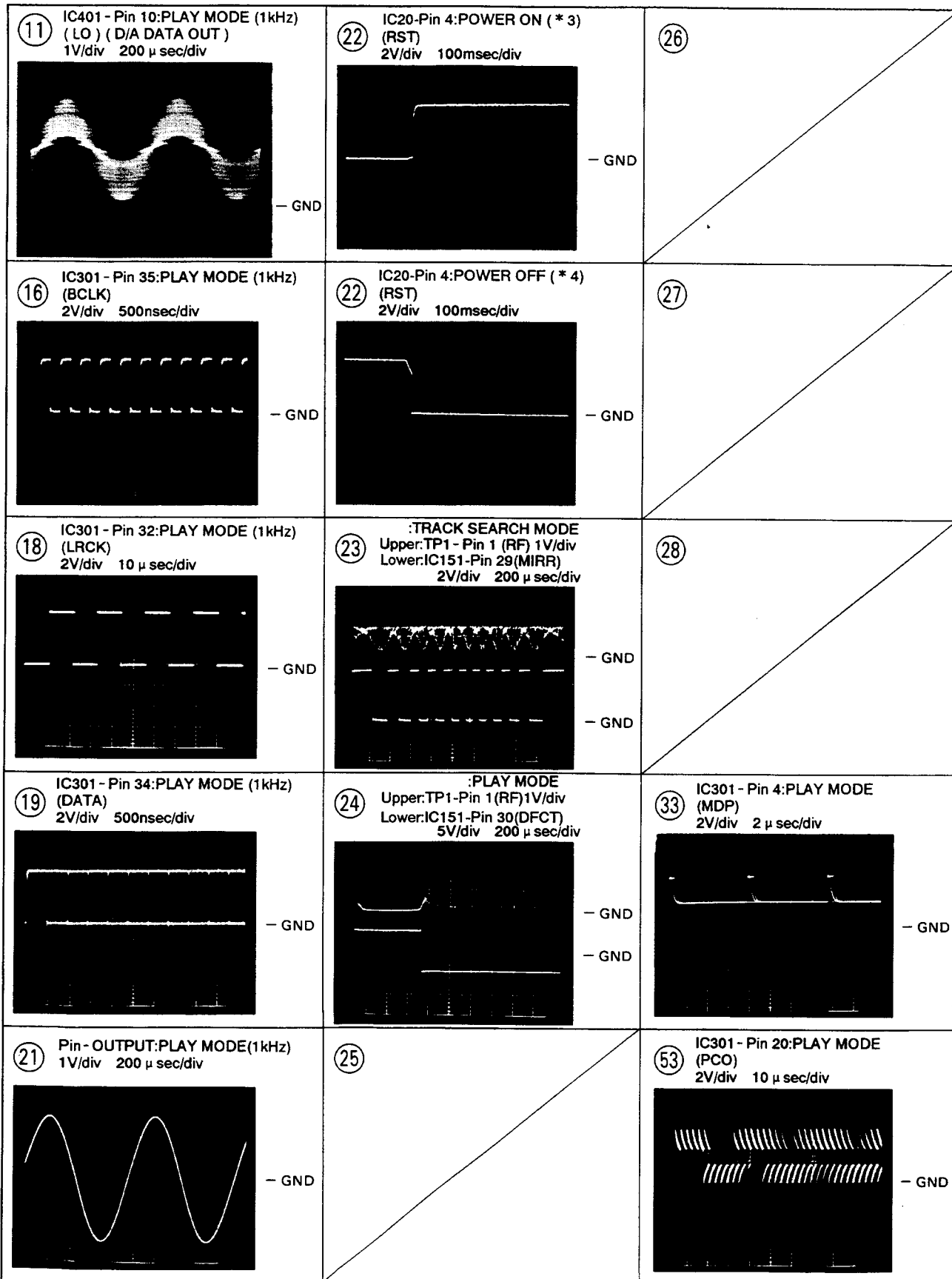
\*1 50T - JUMP: After switching to the pause mode, press the manual search key.

\*2 FOCUS - IN: Press the key without loading a disc.



\*3 POWER ON : Plug AC cord into AC wall socket.

\*4 POWER OFF: Unplug AC cord from AC wall socket.



## 5. ADJUSTMENTS

### 5.1. Adjustment Methods

If a disc player is adjusted incorrectly or inadequately, it may malfunction or not work at all even though there is nothing at all wrong with the pickup or the circuitry. Adjust correctly following the adjustment procedure.

#### ● Adjustment Items/Verification Items and Order

If the specified values cannot be obtained or no adjustment is possible by performing the verifications or adjustments described in steps 1 – 4, the pickup block may be defective.

| Step | Item                                               | Test Point                                  | Adjustment Location                                               |
|------|----------------------------------------------------|---------------------------------------------|-------------------------------------------------------------------|
| 1    | Focus offset verification                          | TP1, Pin 6(FCS. ERR)                        | None                                                              |
| 2    | Tracking error balance verification                | TP1, Pin 2(TRK. ERR)                        | None                                                              |
| 3    | Pickup radial/tangential direction tilt adjustment | TP1, Pin 1(RF)                              | Radial tilt adjustment screw,<br>Tangential tilt adjustment screw |
| 4    | RF level verification                              | TP1, Pin 1(RF)                              | None                                                              |
| 5    | Focus servo loop gain adjustment                   | TP1, Pin 5(FCS. IN)<br>TP1, Pin 6(FCS. ERR) | VR152(FCS. GAN)                                                   |
| 6    | Tracking servo loop gain adjustment                | TP1, Pin 3(TRK. IN)<br>TP1, Pin 2(TRK. ERR) | VR151 (TRK. GAN)                                                  |

#### ● Abbreviation table

|          |                 |
|----------|-----------------|
| FCS. ERR | :Focus Error    |
| TRK. ERR | :Tracking Error |
| FCS GAN  | :Focus Gain     |
| TRK GAN  | :Tracking Gain  |
| FCS. IN  | :Focus In       |
| TRK. IN  | :Tracking In    |

#### ● Measuring Instruments and Tools

1. Dual trace oscilloscope (10:1 probe)
2. Low-frequency oscillator
3. Test disc (YEDS - 7)
4. Low pass filter (  $39\text{k}\Omega$   $\pm 0.001\ \mu\text{F}$  )
5. Resistor (100 k $\Omega$  )
6. Standard tools

## ● Test Point and Adjustment Variable Resistor Positions

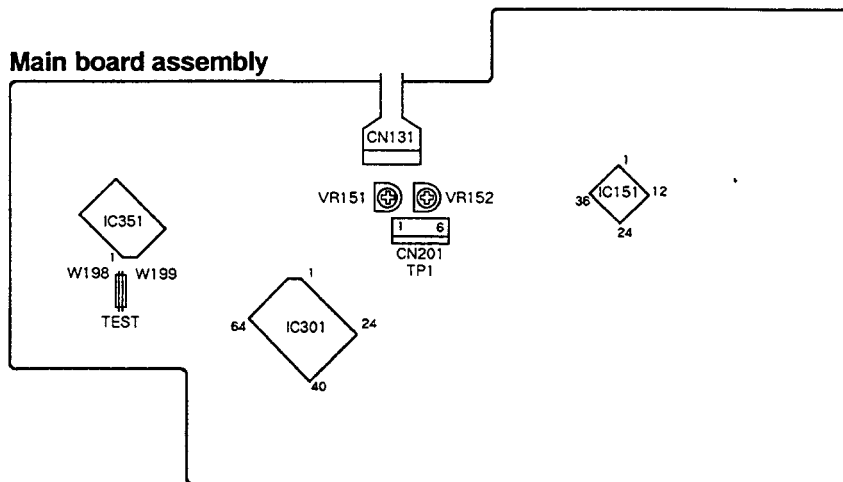


Figure 1. Adjustment Locations

## ● Notes

1. Use a 10:1 probe for the oscilloscope.
2. All the knob positions (settings) for the oscilloscope in the adjustment procedures are for when a 10:1 probe is used.

## ● Test Mode

These models have a test mode so that the adjustments and checks required for service can be carried out easily. When these models are in test mode, the keys on the front panel work differently from normal. Adjustments and checks can be carried out by operating these keys with the correct procedure. For these models, all adjustments are carried out in test mode.

### [Setting these models to test mode]

How to set this model into test mode.

1. Unplug the power cord from the AC wall socket.
2. Short the test mode jumper wires. (See Figure 1.)
3. Plug the power cord into AC wall socket.

When the test mode is set correctly, the display is different from what it usually is when the power is turned on. If the display is still the same as usual, test mode has not been set correctly, so repeat Steps 1 – 3.

**[Release from test mode]**

Here is the procedure for releasing the test mode:

1. Press the STOP key and stop all operations.
2. Unplug the power cord from the AC wall socket.

**[Operations of the keys in test mode]**

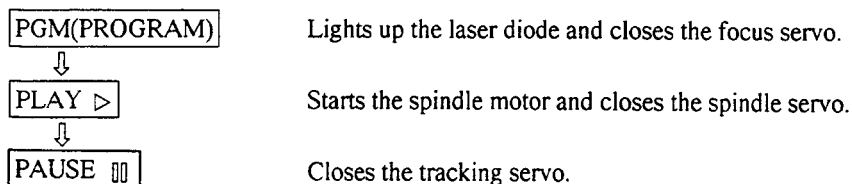
| Code | Key Name         | Function in Test Mode     | Explanation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|------|------------------|---------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|      | PGM<br>(PROGRAM) | Focus servo close         | <p>The laser diode is lit up and the focus actuator is lifted up, then lowered slowly and the focus servo is closed at the point where the objective lens is focused on the disc. With the player in this state, if you lightly rotate the stopped disc by hand, you can hear the sound the focus servo.</p> <p>If you can hear this sound, the focus servo is operating correctly. If you press this key with no disc mounted, the laser diode lights up, the focus actuator is pulled up, then the actuator is lowered and raised three times and returned to its original position.</p>                                                                                                                |
| ▷    | PLAY             | Spindle servo ON          | <p>Starts the spindle motor in the clockwise direction and when the disc rotation reaches the prescribed speed (about 500 rpm at the inner periphery), sets the spindle servo in a closed loop.</p> <p>Be careful. Pressing this key when there is no disc mounted makes the spindle motor run at the maximum speed.</p> <p>If the focus servo does not go correctly into a closed loop or the laser light shines on the mirror section at the outermost periphery of the disc, the same symptom is occurred.</p>                                                                                                                                                                                         |
| ⏸    | PAUSE            | Tracking servo close/open | <p>Pressing this key when the focus servo and spindle servo are operating correctly in closed loops puts the tracking servo into a closed loop, displays the track number being played back and the elapsed time on the front panel, and outputs the playback signal.</p> <p>If the elapsed time is not displayed or not counted correctly or the audio is not played back correctly, it may be that the laser is shining on the section with no sound recorded at the outer edge of the disc, that something is out of adjustment, or that there is some other problem.</p> <p>This key is a toggle key and open/close the tracking servo alternately. This key has no effect if no disc is mounted.</p> |

| Code                                                                                | Key Name                           | Function In Test Mode          | Explanation                                                                                                                                                                                                                                                                                                        |
|-------------------------------------------------------------------------------------|------------------------------------|--------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|    | TRACK /<br>MANUAL<br>SEARCH<br>REV | Carriage reverse<br>(inwards)  | Moves the pickup position toward the inner diameter of the disc. When this key is pressed with the tracking servo in a closed loop, the tracking servo automatically goes into an open loop. Since the motor does not automatically stop at the mechanical end point in test mode, be careful with this operation. |
|    | TRACK /<br>MANUAL<br>SEARCH<br>FWD | Carriage forward<br>(outwards) | Moves the pickup position toward the outer diameter of the disc. When this key is pressed with the tracking servo in a closed loop, the tracking servo automatically goes into an open loop. Since the motor does not automatically stop at the mechanical end point in test mode, be careful with this operation. |
|    | STOP                               | Stop                           | Initializes and the disc rotation stops.<br>The pickup and disc remain where they are when this key is pressed.                                                                                                                                                                                                    |
|  | OPEN/CLOSE                         | Disc tray open/close           | Open/close the disc tray. This key is a toggle key and open/close tray alternately.<br>Pressing this key when the disc is turning stops the disc, then opens the tray.<br>This key operation does not affect the position of the pickup.                                                                           |

#### [How to play back a disc in test mode]

In test mode, since the servos operate independently, playing back a disc requires that you operate the keys in the correct order to close the servos.

Here is the key operation sequence for playing back a disc in test mode.



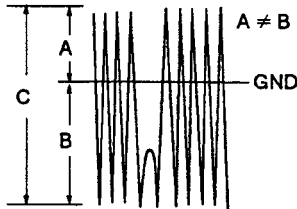
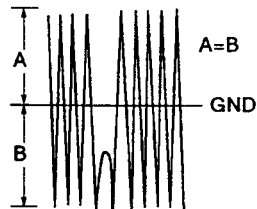
Wait at least 2-3 seconds between each of these operations.

## 1. Focus Offset Verification

|                                                                  |                                                         |                       |                                               |
|------------------------------------------------------------------|---------------------------------------------------------|-----------------------|-----------------------------------------------|
| ● Objective                                                      | Verify the DC offset for the focus error amp.           |                       |                                               |
| ● Symptom when out of adjustment                                 | The model does not focus in and the RF signal is dirty. |                       |                                               |
| ● Measurement instrument connections                             | Connect the oscilloscope to TP1, Pin 6 (FCS. ERR)       | ● Player state        | Test mode, stopped (just the Power switch on) |
|                                                                  | [Settings] 5 mV/division<br>10 ms/division<br>DC mode   | ● Adjustment location | None                                          |
|                                                                  |                                                         | ● Disc                | None needed                                   |
| [Procedure]                                                      |                                                         |                       |                                               |
| Verify the DC voltage at TP1, Pin 6 (FCS. ERR) is $0 \pm 50$ mV. |                                                         |                       |                                               |

Note : If the specified values cannot be obtained or no adjustment is possible by performing the verifications or adjustments described in adjustment items 1 – 4, the pickup block may be defective.

## 2. Tracking Error Balance Verification

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                  |                       |                                                                    |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|-----------------------|--------------------------------------------------------------------|
| ● Objective                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | To verify that there is no variation in the sensitivity of the tracking photo diode.             |                       |                                                                    |
| ● Symptom when out of adjustment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Play does not start or track search is impossible.                                               |                       |                                                                    |
| ● Measurement instrument connections                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Connect the oscilloscope to TP1, Pin 2 (TRK. ERR). This connection may be via a low pass filter. | ● Player state        | Test mode, focus and spindle servos closed and tracking servo open |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | [Settings] 50 mV/division<br>5 ms/division<br>DC mode                                            | ● Adjustment location | None                                                               |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                  | ● Disc                | YEDS-7                                                             |
| [Procedure]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                  |                       |                                                                    |
| <ol style="list-style-type: none"> <li>1. Move the pickup to midway across the disc (R=35 mm) with the TRACK/MANUAL SEARCH FWD <math>\triangleright\triangleright \cdot \triangleright\triangleright</math> or REV <math>\triangleleft\triangleleft \cdot \triangleleft\triangleleft</math> key.</li> <li>2. Press the PGM (PROGRAM) key, then the PLAY <math>\triangleright</math> key in that order to close the focus servo then the spindle servo.</li> <li>3. Line up the bright line (ground) at the center of the oscilloscope screen and put the oscilloscope into DC mode.</li> <li>4. Supposing that the positive amplitude of the tracking error signal at TP1, pin 2 (TRK ERR) is (A) and the negative amplitude is (B), the following expression is satisfied.</li> </ol> |                                                                                                  |                       |                                                                    |
| <div style="display: flex; justify-content: space-around; align-items: flex-end;"> <div style="text-align: center;"> <p>When <math>A \geq B</math>, <math>\frac{A-B}{C} \times \frac{1}{2} \leq 0.1</math></p> <p>When <math>A &lt; B</math>, <math>\frac{B-A}{C} \times \frac{1}{2} \leq 0.1</math></p> </div> <div style="text-align: center;">  <p>When there is a DC component</p> </div> <div style="text-align: center;">  <p>When there is no DC component</p> </div> </div>                                                                                                                           |                                                                                                  |                       |                                                                    |

### 3. Pickup Radial/Tangential Tilt Adjustment

|                                      |                                                                                                                                                               |                                                           |                                                                                                               |
|--------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|
| ● Objective                          | To adjust the angle of the pickup relative to the disc so that the laser beams are shone straight down into the disc for the best read out of the RF signals. |                                                           |                                                                                                               |
| ● Symptom when out of adjustment     | Sound broken; some discs can be played but not others.                                                                                                        |                                                           |                                                                                                               |
| ● Measurement instrument connections | Connect the oscilloscope to TPI, Pin 1 (RF).<br><br>[Settings] 20 mV/division<br>200 ns/division<br>AC mode                                                   | ● Player state<br><br>● Adjustment location<br><br>● Disc | Test mode, play<br><br>Pickup radial tilt adjustment screw and tangential tilt adjustment screw<br><br>YEDS-7 |

#### [Procedure]

1. Press the TRACK / MANUAL SEARCH FWD  $\triangleright\triangleright$  •  $\triangleright\triangleright$  or REV  $\triangleleft\triangleleft$  •  $\triangleleft\triangleleft$  key to move the pickup to halfway across the disc (R=35mm).  
Press the PGM (PROGRAM) key, the PLAY  $\triangleright$  key and PAUSE  $\square\square$  key in that order to close the respective servos and put the player into play mode.
2. First, adjust the radial tilt adjustment screw with a Phillips screwdriver so that the eye pattern (the diamond shape at the center of the RF signal) can be seen the most clearly.
3. Next, adjust the tangential tilt adjustment screw with a Phillips screwdriver so that the eye pattern (the diamond shape at the center of the RF signal) can be seen the most clearly (Figure 3).
4. Adjust the radial tilt adjustment screw and the tangential tilt adjustment screw again so that the eye pattern can be seen the most clearly. As necessary, adjust the two screws alternately so that the eye pattern can be seen the most clearly.
5. When the adjustment is completed, lock the radial and tangential adjustment screw.

**Note:** Radial and tangential mean the directions relative to the disc shown in Figure 2.

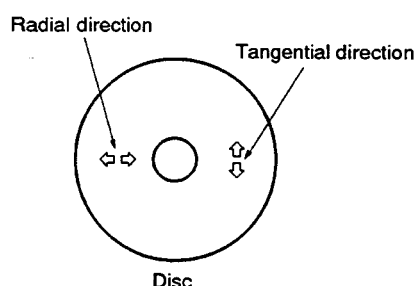
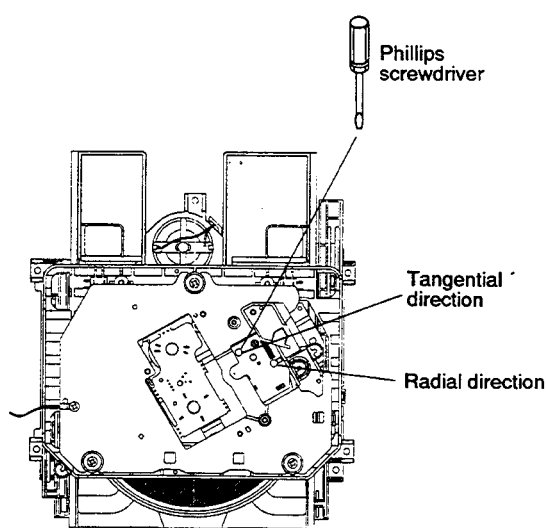
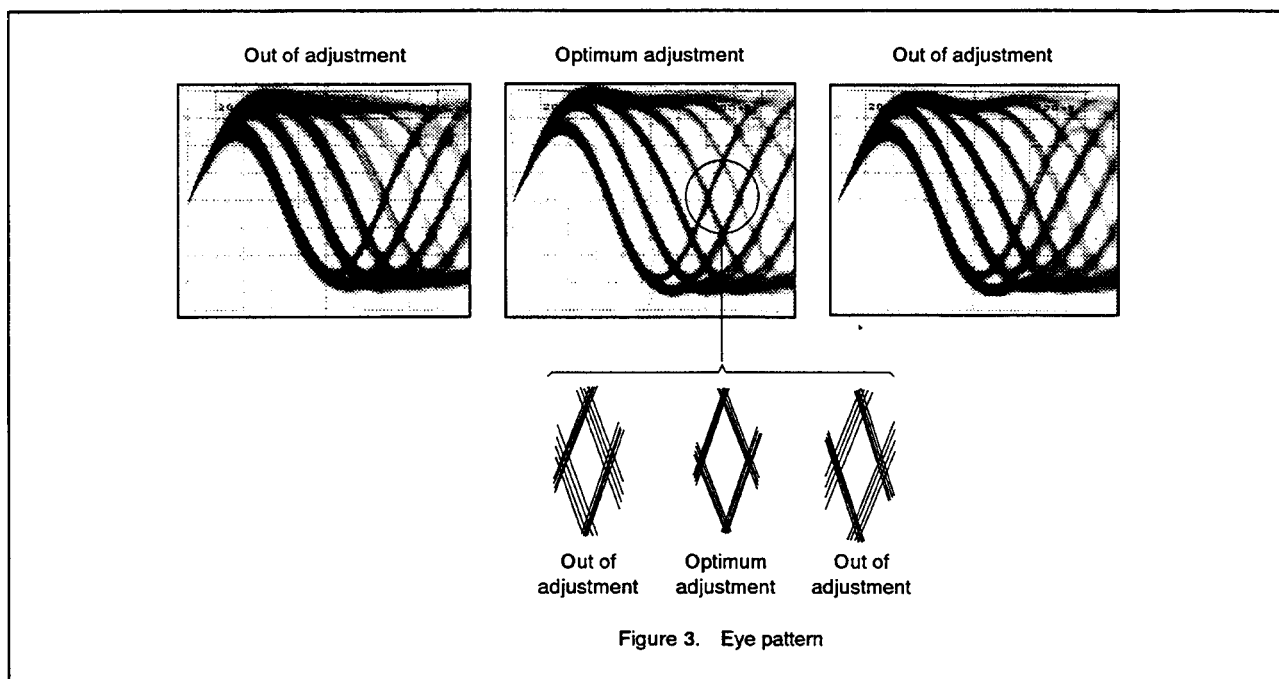


Figure 2



Adjustment locations



#### 4. RF Level Verification

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                        |                       |                 |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------|-----------------------|-----------------|
| ● Objective                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | To verify the playback RF signal amplitude             |                       |                 |
| ● Symptom when out of adjustment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | No play or no search                                   |                       |                 |
| ● Measurement instrument connections                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Connect the oscilloscope to TP1, Pin 1 (RF).           | ● Player state        | Test mode, play |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | [Settings] 50 mV/division<br>10 ms/division<br>AC mode | ● Adjustment location | None            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                        | ● Disc                | YEDS-7          |
| <b>[Procedure]</b> <ol style="list-style-type: none"> <li>1. Move the pickup to midway across the disc (R=35 mm) with the TRACK/MANUAL SEARCH FWD <math>\triangleright\triangleright \cdot \triangleright\triangleright</math> or REV <math>\triangleleft\triangleleft \cdot \triangleleft\triangleleft</math> key, then press the PGM (PROGRAM) key, the PLAY <math>\triangleright</math> key and PAUSE <math>\square\square</math> key in that order to close the respective servos and put the player into play mode.</li> <li>2. Verify the RF signal amplitude is <math>1.2 V_{p-p} \pm 0.2 V</math>.</li> </ol> |                                                        |                       |                 |

## 5. Focus Servo Loop Gain Adjustment

|                                      |                                                                                    |                                                           |                                                       |
|--------------------------------------|------------------------------------------------------------------------------------|-----------------------------------------------------------|-------------------------------------------------------|
| ● Objective                          | To optimize the focus servo loop gain.                                             |                                                           |                                                       |
| ● Symptom when out of adjustment     | Playback does not start or focus actuator noisy.                                   |                                                           |                                                       |
| ● Measurement instrument connections | See figure 4.<br>[Settings]<br>CH1 CH2<br>20 mV/division 5 mV/division<br>X-Y mode | ● Player state<br><br>● Adjustment location<br><br>● Disc | Test mode, play<br><br>VR152 (FCS. GAN)<br><br>YEDS-7 |

### [Procedure]

1. Set the AF generator output to 1.2 kHz and 1 Vp-p.
2. Press the TRACK/MANUAL SEARCH FWD  $\triangleright\triangleright \cdot \triangleright\triangleright$  or REV  $\triangleleft\triangleleft \cdot \triangleleft\triangleleft$  key to move the pickup to halfway across the disc (R=35 mm), then press the PGM (PROGRAM) key, the PLAY  $\triangleright$  key and the PAUSE  $\square\square$  key in that order to close the corresponding servos and put the player into play mode.
3. Adjust VR152 (FCS. GAN) so that the Lissajous waveform is symmetrical about the X axis and the Y axis.

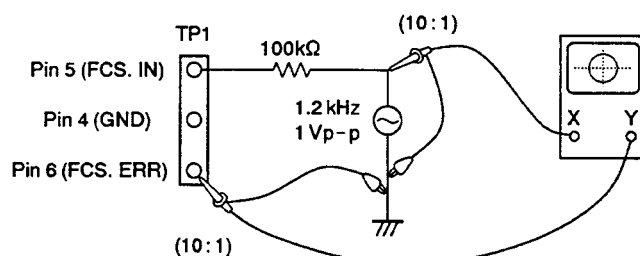
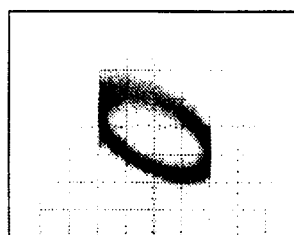
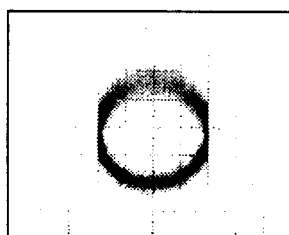


Figure 4

### Focus Gain Adjustment



Higher gain



Optimum gain



Lower gain

6. Tracking Servo Loop Gain Adjustment

|                                      |                                                                                             |                       |                  |
|--------------------------------------|---------------------------------------------------------------------------------------------|-----------------------|------------------|
| ● Objective                          | To optimize the tracking servo loop gain.                                                   |                       |                  |
| ● Symptom when out of adjustment     | Playback does not start, during searches the actuator is noisy, or tracks are skipped.      |                       |                  |
| ● Measurement instrument connections | See Figure 5.                                                                               | ● Player state        | Test mode, play  |
|                                      | [Settings]<br>CH1                      CH2<br>50 mV/division   20 mV/division<br>X - Y mode | ● Adjustment location | VR151 (TRK. GAN) |
|                                      |                                                                                             | ● Disc                | YEDS-7           |

[Procedure]

1. Set the AF generator output to 1.2 kHz and 2 Vp-p.
2. Press the TRACK/MANUAL SEARCH FWD  $\triangleright\triangleright$  •  $\triangleright\triangleright$  or REV  $\triangleleft\triangleleft$  •  $\triangleleft\triangleleft$  key to move the pickup to halfway across the disc (R=35 mm), then press the PGM (PROGRAM) key, the PLAY  $\triangleright$  key and the PAUSE  $\square\square$  key in that order to close the corresponding servos and put the player into play mode.
3. Adjust VR151 (TRK. GAN) so that the Lissajous waveform is symmetrical about the X axis and the Y axis.

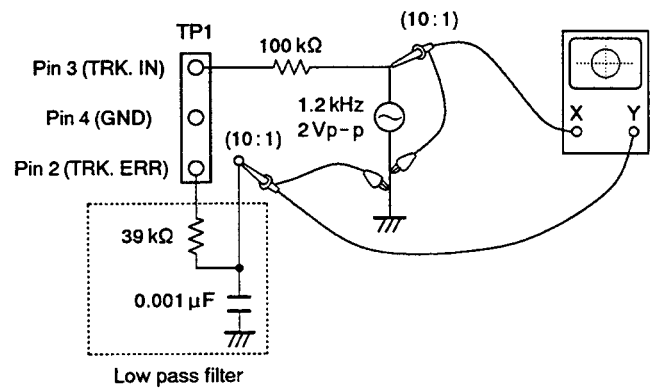
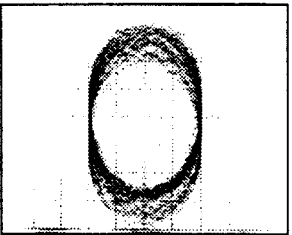


Figure 5

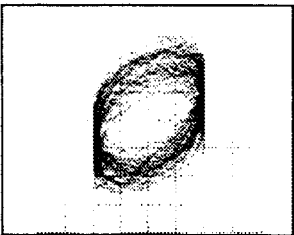
Tracking Gain Adjustment



Higher gain

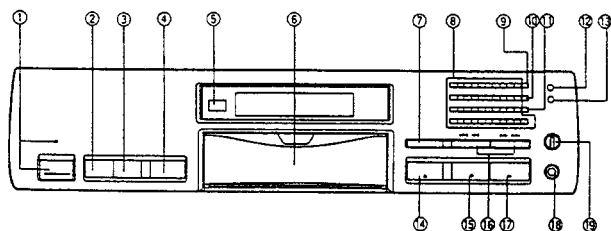


Optimum gain



Lower gain

## 6. PANEL FACILITIES



- ① POWER STANDBY/ON switch and STANDBY indicator
- ② DISPLAY OFF button
- ③ RANDOM button
- ④ HI-LITE SCAN button
- ⑤ Remote sensor  
Receives the signal from the remote control unit.
- ⑥ Disc tray
- ⑦ Stop button (■)
- ⑧ Digit buttons : (1 - 20, >20)
- ⑨ PGM (Program) button
- ⑩ REPEAT button
- ⑪ TIME button
- ⑫ PEAK SEARCH button
- ⑬ COMPU/AUTO EDIT button  
(•COMPU/••AUTO)
- ⑭ OPEN/CLOSE button (▲)
- ⑮ Pause button (II)
- ⑯ Track/Manual search buttons  
(◀◀ ◀▶▶ ▶▶▶)
- ⑰ Play button (▶)
- ⑱ Headphones jack (PHONES)
- ⑲ Headphones/line volume control (PHONES/  
LINE LEVEL)

## 7. SPECIFICATIONS

### 1. General

Type ..... Compact disc digital audio system  
 Power requirements ..... AC 220 - 240 V, 50/60 Hz  
 Power consumption ..... 15 W  
 Operating temperature ..... +5°C - +35°C  
 Weight ..... 3.9 kg

### 2. Audio section

Frequency response ..... 2 Hz - 20 kHz  
 S/N ratio ..... 108 dB or more (EIAJ)  
 Dynamic range ..... 96 dB or more (EIAJ)  
 Harmonic distortion ..... 0.0028% or less (EIAJ)  
 Output voltage ..... 2.0 V  
 Wow and flutter ..... Limit of measurement  
 (±0.001% W.PEAK) or less (EIAJ)  
 Channels ..... 2-channel (stereo)

### 3. Output terminal

Audio line output jacks (VARIABLE)  
 Audio line output jacks (FIXED)  
 Optical digital output jack  
 CD-DECK SYNCHRO jack  
 Headphone jack (with motor drive volume control)

### 4. Functions

Basic operation buttons  
 • PLAY, PAUSE, STOP

Search function

- Direct play
- Track search
- Manual search

Hi-Lite scan

Programming

- Maximum 24 steps
- Pause
- Program clear (single track or all tracks)

Repeat functions

- 1 track repeat
- All tracks repeat
- Program play repeat
- Random play repeat

Random play (repeat also available)

Switching display

Time consumed, remaining time (track/disc), and total time

Timer start

Peak search

Compu/Auto program editing

Selects the tracks within the specified time.

Display off

### 5. Accessories

- Remote control unit ..... 1
- Size AAA/R03/dry batteries ..... 2
- Output cable ..... 1
- Operating instructions ..... 1

### NOTE:

Specifications and design subject to possible modification without notice, due to improvements.

# Service Manual

ORDER NO.  
RRV1139

COMPACT DISC PLAYER

# PD-S603

## PD-S603-G

- Refer to the service manual ARP2765 for PD-S602/  
WEMXK.

THIS MANUAL IS APPLICABLE TO THE FOLLOWING MODEL(S) AND TYPE(S).

| Type  | Model   |           | Power Requirement | Remarks |
|-------|---------|-----------|-------------------|---------|
|       | PD-S603 | PD-S603-G |                   |         |
| WEMXK | ○       | ○         | AC220 - 240V      |         |

# 1. SAFETY INFORMATION

(FOR EUROPEAN MODEL ONLY)

VARO!

AVATTAESSA JA SUOJALUKITUS OHITETTAESSA OLET ALTTIINA NÄKYMÄTTÖMÄLLE LASERSÄTEILYLLE. ÄLÄ KATSO SÄTEESEEN.

ADVERSEL:

USYNLIG LASERSTRÅLING VED ÅBNING NÅR SIKKERHEDSAFBRYDERE ER UDE AF FUNKTION. UNDGA UDSÆTTELSE FOR STRÅLING.

VARNING!

OSYNLIG LASERSTRÅLNING NÅR DENNA DEL ÄR ÖPPNAD OCH SPÄRREN ÄR URKOPPLAD. BETRakta EJ STRÅLEN.



LASER  
Kuva 1  
Lasersäteilyn  
varoituserkki

WARNING!

DEVICE INCLUDES LASER DIODE WHICH EMITS INVISIBLE INFRARED RADIATION WHICH IS DANGEROUS TO EYES. THERE IS A WARNING SIGN ACCORDING TO PICTURE 1 INSIDE THE DEVICE CLOSE TO THE LASER DIODE.



LASER  
Picture 1  
Warning sign for  
laser radiation

IMPORTANT

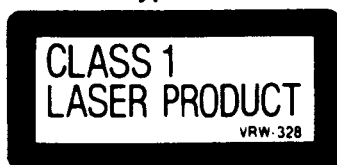
THIS PIONEER APPARATUS CONTAINS LASER OF CLASS 1. SERVICING OPERATION OF THE APPARATUS SHOULD BE DONE BY A SPECIALLY INSTRUCTED PERSON.

LASER DIODE CHARACTERISTICS

MAXIMUM OUTPUT POWER: 5 mw  
WAVELENGTH: 780-785 nm

## LABEL CHECK

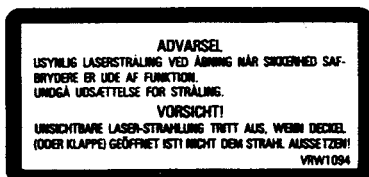
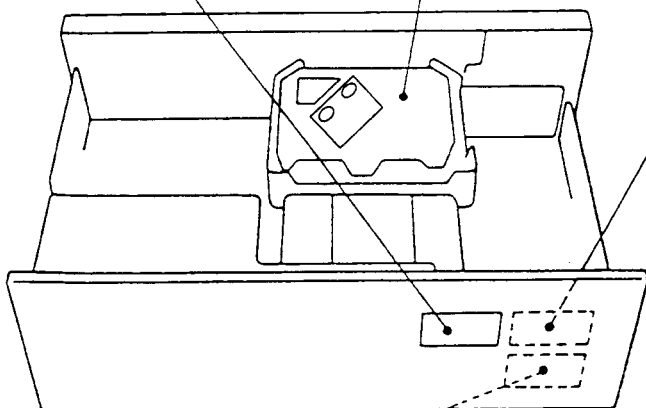
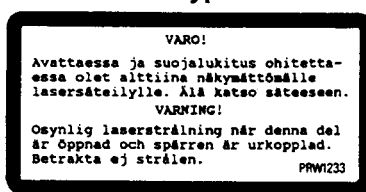
WEMXK type



WEMXK type



WEMXK type



WEMXK type

## Additional Laser Caution

### 1. Laser Interlock Mechanism

The position of the switch (S601) for detecting loading state is detected by the system microprocessor, and the design prevents laser diode oscillation when the switch (S601) is not on CLMP terminal side (CLMP signal is OFF or high level).

Thus, the interlock will no longer function if the switch (S601) is deliberately set to CLMP terminal side (low level). The interlock also does not function in the test mode \*. Laser diode oscillation will continue, if pin 1 of M51593FP (IC101) on the PRE AMP BOARD ASSY mounted on the pickup assembly is connected to GND, or pin 19 is connected to low level (ON), or else the terminals of Q101 are shorted to each other (fault condition).

2. When the cover is opened, close viewing of the objective lens with the naked eye will cause exposure to a Class 1 laser beam.

92S1B

\* Refer to page 26 on the service manual ARP2765.

## 3. SCHEMATIC DIAGRAM

A

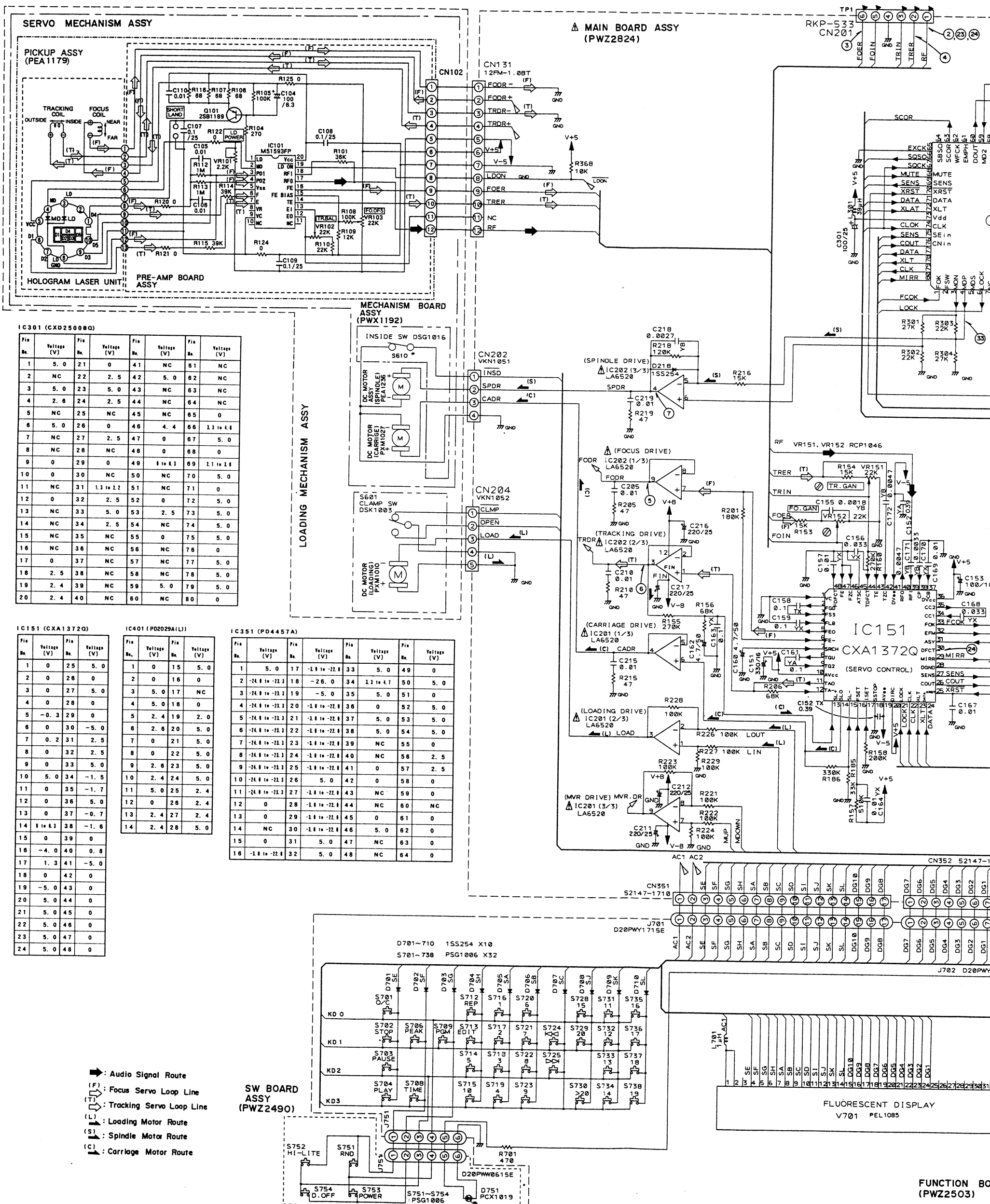
B

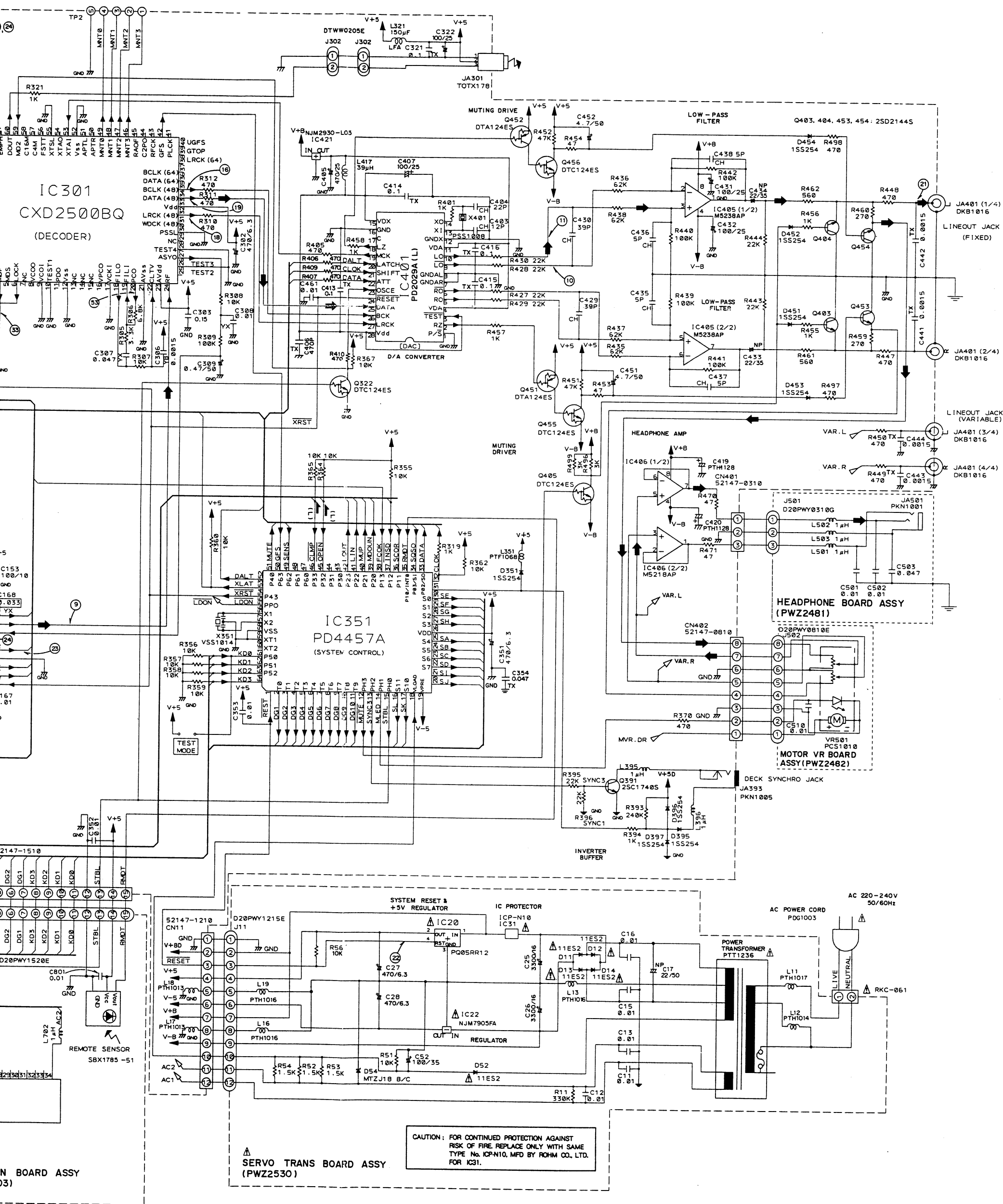
C

D

E

F





2. CONTRAST OF MISCELLANEOUS PARTS

NOTES:

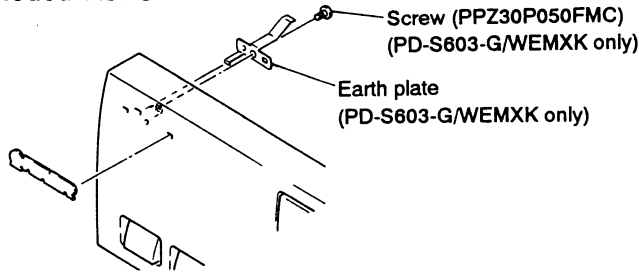
- Parts marked by “NSP” are generally unavailable because they are not in our Master Spare Parts List.
- The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- Parts marked by “⊙” are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.
- When ordering resistors, first convert resistance values into code form as shown in the following examples.  
Ex.1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J=5%, and K=10%).  
560 Ω → 56 × 10<sup>1</sup> → 561 ..... RD1/8PM 5 6 1 J  
47k Ω → 47 × 10<sup>3</sup> → 473 ..... RD1/4PS 4 7 3 J  
0.5 Ω → 0R5 ..... RN2H 0 R 5 K  
1 Ω → 010 ..... RS1P 0 1 0 K  
Ex.2 When there are 3 effective digits (such as in high precision metal film resistors).  
5.62k Ω → 562 × 10<sup>1</sup> → 5621 ..... RN1/4PC 5 6 2 1 F

■ CONTRAST OF PD-S603/WEMXK, PD-S603-G/WEMXK and PD-S602/WEMXK

PD-S603/WEMXK, PD-S603-G/WEMXK and PD-S602/WEMXK have the same construction except for the following:

| Mark                   | Symbol & Description                                                 | Part No.          |                   |                     | Remarks      |
|------------------------|----------------------------------------------------------------------|-------------------|-------------------|---------------------|--------------|
|                        |                                                                      | PD-S602/<br>WEMXK | PD-S603/<br>WEMXK | PD-S603-G/<br>WEMXK |              |
| ⚠<br>NSP<br>⚠<br>⚠ NSP | MAIN board assembly                                                  | PWZ2480           | PWZ2824           | PWZ2824             |              |
|                        | FUNCTION board assembly                                              | PWZ2489           | Not used          | Not used            |              |
|                        | FUNCTION board assembly                                              | Not used          | PWZ2503           | PWZ2503             |              |
|                        | SERVO TRANS board assembly                                           | PWZ2492           | Not used          | Not used            |              |
|                        | SERVO TRANS board assembly                                           | Not used          | PWZ2530           | PWZ2530             |              |
| NSP                    | Function panel assembly                                              | PEA1262           | Not used          | Not used            | For Exterior |
|                        | Tray lens                                                            | PNW2242           | Not used          | Not used            |              |
|                        | Tray name plate                                                      | PNW2244           | PNW2457           | PNW2458             |              |
|                        | Power button                                                         | PAC1712           | PAC1712           | PAC1779             |              |
|                        | 26 key                                                               | PAC1715           | PAC1715           | PAC1781             |              |
|                        | Function button                                                      | PAC1713           | PAC1713           | PAC1780             |              |
|                        | PIONEER badge                                                        | PAM1608           | PAM1608           | RAN1011             |              |
|                        | Function panel                                                       | PNW2246           | PNW2463           | PNW2464             |              |
|                        | Rear base                                                            | PNA1925           | Not used          | Not used            |              |
|                        | Rear base                                                            | Not used          | PNA2129           | PNA2131             |              |
| NSP                    | Bonnet                                                               | PYY1162           | PYY1162           | PYY1177             | For knob C   |
|                        | Knob C                                                               | RAC1608           | RAC1608           | Not used            |              |
|                        | Headphone knob                                                       | Not used          | Not used          | PAC1680             |              |
|                        | Earth plate                                                          | Not used          | Not used          | PBK1132             |              |
|                        | Operating instructions                                               | PRE1173           | PRE1204           | PRE1204             |              |
|                        | (English/French/German/Italian/Dutch/<br>Swedish/Spanish/Portuguese) |                   |                   |                     |              |
|                        | Remote control unit                                                  | PWW1060           | PWW1060           | PWW1095             |              |
|                        | Battery lid                                                          | PZN1001           | PZN1001           | PZN1013             |              |
|                        | CD packing case                                                      | PHG1873           | PHG2041           | PHG2043             |              |
|                        |                                                                      |                   |                   |                     | For Packing  |

● Exploded Views



FUNCTION BOARD ASSEMBLY

PWZ2503 and PWZ2489 have the same construction except for the following:

| Mark | Symbol & Description                            |
|------|-------------------------------------------------|
|      | C801<br>V701 FL INDICATOR TUBE<br>REMOTE SENSOR |

SERVO TRANS BOARD ASSEMBLY

PWZ2530 and PWZ2492 have the same construction except for the following:

| Mark | Symbol & Description                                                   |
|------|------------------------------------------------------------------------|
|      | IC22<br>L11<br>L12<br>L13, L16, L19<br>C17<br><br>C25, C26<br>C27, C28 |

■ PARTS LIST FOR PD-S603/WEMXK AND PD-S603-G/WEMXK

Mark No. Description Part No.

MAIN BOARD ASSEMBLY (PWZ2824)

SEMICONDUCTORS

|   |                        |            |
|---|------------------------|------------|
|   | IC151                  | CXA1372Q   |
|   | IC301                  | CXD2500BQ  |
| ⚠ | IC201, IC202           | LA6520     |
|   | IC406                  | M5218AP    |
|   | IC405                  | M5238AP    |
|   | IC421                  | NJM2930L05 |
|   | IC401                  | PD2029A(L) |
|   | IC351                  | PD4457A    |
|   | Q391                   | 2SC1740S   |
|   | Q403, Q404, Q453, Q454 | 2SD2144S   |
|   | Q451, Q452             | DTA124ES   |
|   | Q322, Q405, Q455, Q456 | DTC124ES   |
|   | D218, D351, D395-D397  | 1SS254     |
|   | D451-D454              | 1SS254     |

COILS AND FILTERS

|  |            |         |
|--|------------|---------|
|  | L395, L396 | LAU010K |
|  | L301, L417 | LAU390J |
|  | L321       | LFA151J |
|  | L17, L18   | PTH1013 |
|  | L351       | RTF1068 |

CAPACITORS

|  |            |            |
|--|------------|------------|
|  | C435-C438  | CCCCH050C5 |
|  | C403       | CCCCH120J5 |
|  | C404       | CCCCH220J5 |
|  | C429, C430 | CCCCH390J5 |
|  | C433, C434 | CEANP220M3 |

PD-S603, PD-S603-G

NOTE FOR SCHEMATIC DIAGRAMS (Type 4A)

1. When ordering service parts, be sure to refer to "PARTS LIST of EXPLODED VIEWS" or "PCB PARTS LIST".

2. Since these are basic circuits, some parts of them or the values of some components may be changed for improvement.

3. RESISTORS:  
Unit: k:K $\Omega$ , M:M $\Omega$ , or  $\Omega$  unless otherwise noted.  
Rated power: 1/4W, 1/8W, 1/10W unless otherwise noted.  
Tolerance: (F):  $\pm 1\%$ , (G):  $\pm 2\%$ , (K):  $\pm 10\%$ , (M):  $\pm 20\%$  or  $\pm 5\%$  unless otherwise noted.

4. CAPACITORS:  
Unit: p:pF or  $\mu$ F unless otherwise noted.  
Ratings: capacitor ( $\mu$ F)/ voltage (V) unless otherwise noted.  
Rated voltage: 50V except for electrolytic capacitors.

5. COILS:  
Unit: m:mH or  $\mu$ H unless otherwise noted.

6. VOLTAGE AND CURRENT:  
 or  $\sim$  V;  
DC voltage (V) in PLAY mode unless otherwise noted.  
 $\leftrightarrow$  mA or  $\rightarrow$  mA;  
DC current in PLAY mode unless otherwise noted.  
Value in ( ) is DC current in STOP mode.

7. OTHERS:  
 or :  
• The  $\Delta$  mark found on some component parts indicates the importance of the safety factor of the parts. Therefore, when replacing, be sure to use parts of identical designation.

8. SCH— ON THE SCHEMATIC DIAGRAM:  
• SCH— indicates the drawing number of the schematic diagram.  
gram. (SCH stands for schematic diagram.)

|                         |      |                                                                                       |
|-------------------------|------|---------------------------------------------------------------------------------------|
| FUNCTION BOARD ASSEMBLY | S701 | : OPEN/CLOSE                                                                          |
| SW BOARD ASSEMBLY       | S751 | : RANDOM                                                                              |
|                         | S752 | : HI-LITE SCAN                                                                        |
|                         | S753 | : POWER                                                                               |
|                         | S754 | : DISPLAY OFF                                                                         |
|                         | S706 | : PEAK SEARCH                                                                         |
|                         | S708 | : TIME                                                                                |
|                         | S709 | : PGM                                                                                 |
|                         | S712 | : REPEAT                                                                              |
|                         | S713 | : EDIT                                                                                |
|                         | S714 | : 5                                                                                   |
|                         | S715 | : 10                                                                                  |
|                         | S716 | : 1                                                                                   |
|                         | S717 | : 2                                                                                   |
|                         | S718 | : 3                                                                                   |
|                         | S719 | : 4                                                                                   |
|                         | S720 | : 6                                                                                   |
|                         | S721 | : 7                                                                                   |
|                         | S722 | : 8                                                                                   |
|                         | S723 | : 9                                                                                   |
|                         | S724 | :  |
|                         | S725 | :  |
|                         | S728 | : 15                                                                                  |
|                         | S729 | : 20                                                                                  |
|                         | S730 | : > 20                                                                                |
|                         | S731 | : 11                                                                                  |
|                         | S732 | : 12                                                                                  |
|                         | S733 | : 13                                                                                  |
|                         | S734 | : 14                                                                                  |
|                         | S735 | : 16                                                                                  |
|                         | S736 | : 17                                                                                  |
|                         | S737 | : 18                                                                                  |
|                         | S738 | : 19                                                                                  |

n except for the following:

|  | Part No.                            |                                        | Remarks |
|--|-------------------------------------|----------------------------------------|---------|
|  | PWZ2489                             | PWZ2503                                |         |
|  | Not used<br>PEL1073<br>SBX1610 – 51 | CKCYF103Z50<br>PEL1085<br>SBX1785 – 51 |         |

LY  
n except for the following:

|  | Part No.                                                                                   |                                                                                     | Remarks |
|--|--------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------|
|  | PWZ2492                                                                                    | PWZ2530                                                                             |         |
|  | NJM79L05A<br>Not used<br>Not used<br>Not used<br>Not used<br><br>CEAS472M16<br>CEAS471M6R3 | NJM7905FA<br>PTH1017<br>PTH1014<br>PTH1016<br>CEANP220M50<br><br>PCH1120<br>PCH1123 |         |

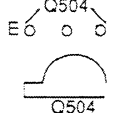
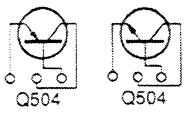
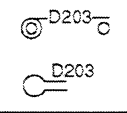
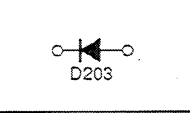
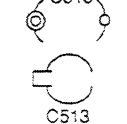
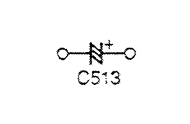
ND PD-S603-G/WEMXK

| Part No. | Mark | No.                             | Description | Part No. |
|----------|------|---------------------------------|-------------|----------|
| 824)     |      | C153                            | CEAS101M10  |          |
|          |      | C151                            | CEAS331M16  |          |
|          |      | C160, C162, C451, C452          | CEAS4R7M50  |          |
|          |      | C309                            | CEASR47M50  |          |
|          |      | C301, C322, C407, C431, C432    | CENA101M25  |          |
| 2Q       |      | C405                            | CENA471M25  |          |
| OBQ      |      | C158, C321, C413-C416           | CFTXA104J50 |          |
|          |      | C441-C444                       | CFTXA152J50 |          |
| P        |      | C152                            | CFTXA394J50 |          |
| P        |      | C406                            | CFTXA471J50 |          |
| OL05     |      | C161                            | CFTYA104J50 |          |
| A(L)     |      | C157, C164, C169, C308          | CGCYX103K25 |          |
| A.       |      | C159, C163                      | CGCYX104K25 |          |
| OS       |      | C156, C168                      | CGCYX333K25 |          |
| 4S       |      | C307, C354                      | CGCYX473K25 |          |
| ES       |      | C306                            | CKCYB152K50 |          |
| ES       |      | C155                            | CKCYB182K50 |          |
|          |      | C218                            | CKCYB272K50 |          |
|          |      | C170                            | CKCYB332K50 |          |
|          |      | C171, C172                      | CKCYB472K50 |          |
|          |      | C167, C205, C210, C215, C219    | CKCYF103Z50 |          |
|          |      | C352, C353, C461                | CKCYF103Z50 |          |
|          |      | C303                            | CQMA154J50  |          |
|          |      | C302, C351 (470/6.3)            | PCH1123     |          |
|          |      | C211, C212, C216, C217 (220/25) | PCH1128     |          |
| 50C50    |      | C419, C420 (220/25)             | PCH1128     |          |
| 20J50    |      |                                 |             |          |
| 20J50    |      |                                 |             |          |
| 90J50    |      |                                 |             |          |
| 20M35    |      |                                 |             |          |

4. PCB DIAGRAM

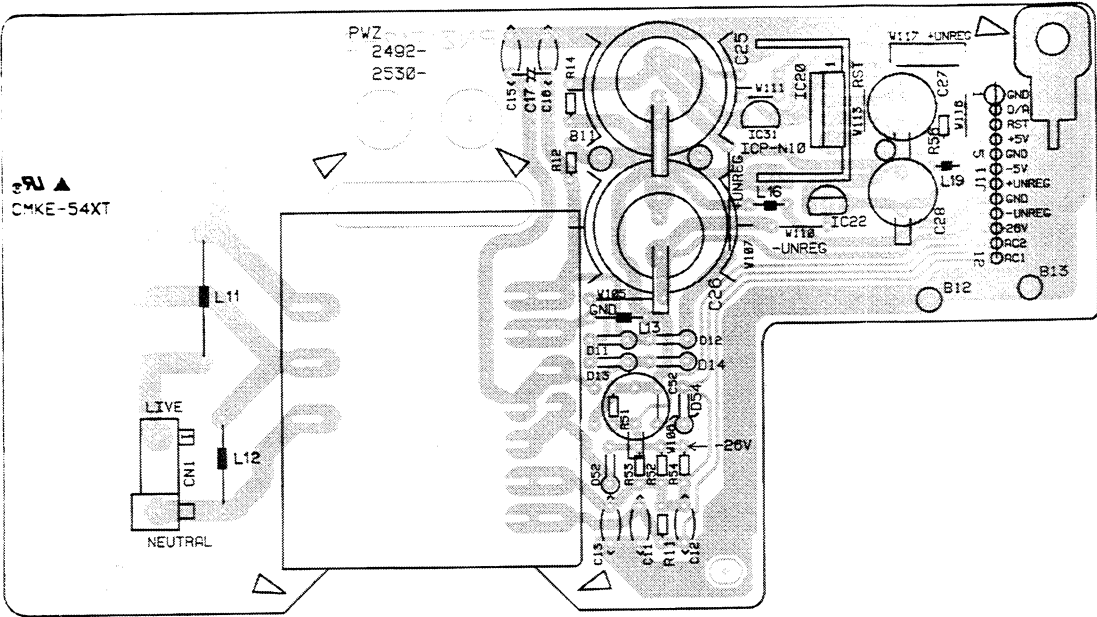
• This diagram is viewed from the mounted parts side.

NOTE FOR PCB DIAGRAMS:  
1. Part numbers in PCB diagrams match those in the schematic diagrams.  
2. A comparison between the main parts of PCB and schematic diagrams is shown below.

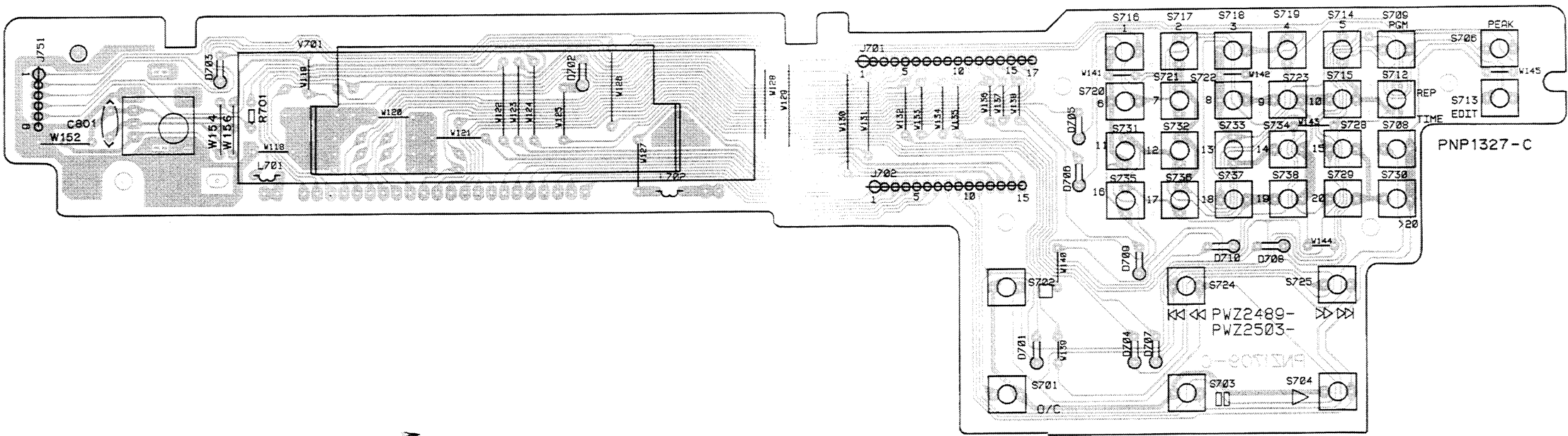
| Symbol in PCB Diagrams                                                                    | Symbol in Schematic Diagrams                                                              | Part Name                |
|-------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|--------------------------|
| <br>Q504 | <br>Q504 | Transistor               |
| <br>D203 | <br>D203 | Diode                    |
| <br>C513 | <br>C513 | Capacitor<br>(Polarized) |

3. The transistor terminal marked with E or  shows the emitter.  
4. The diode terminal marked with  or  shows cathode side.  
5. The capacitor terminal marked with  or  shows negative terminal.

SERVO TRANS BOARD ASSY



FUNCTION BOARD ASSY



Q391

Q454  
Q404  
IC406

Q453  
Q403

Q456  
IC405

Q405  
Q452  
Q455

Q451

IC202 IC401

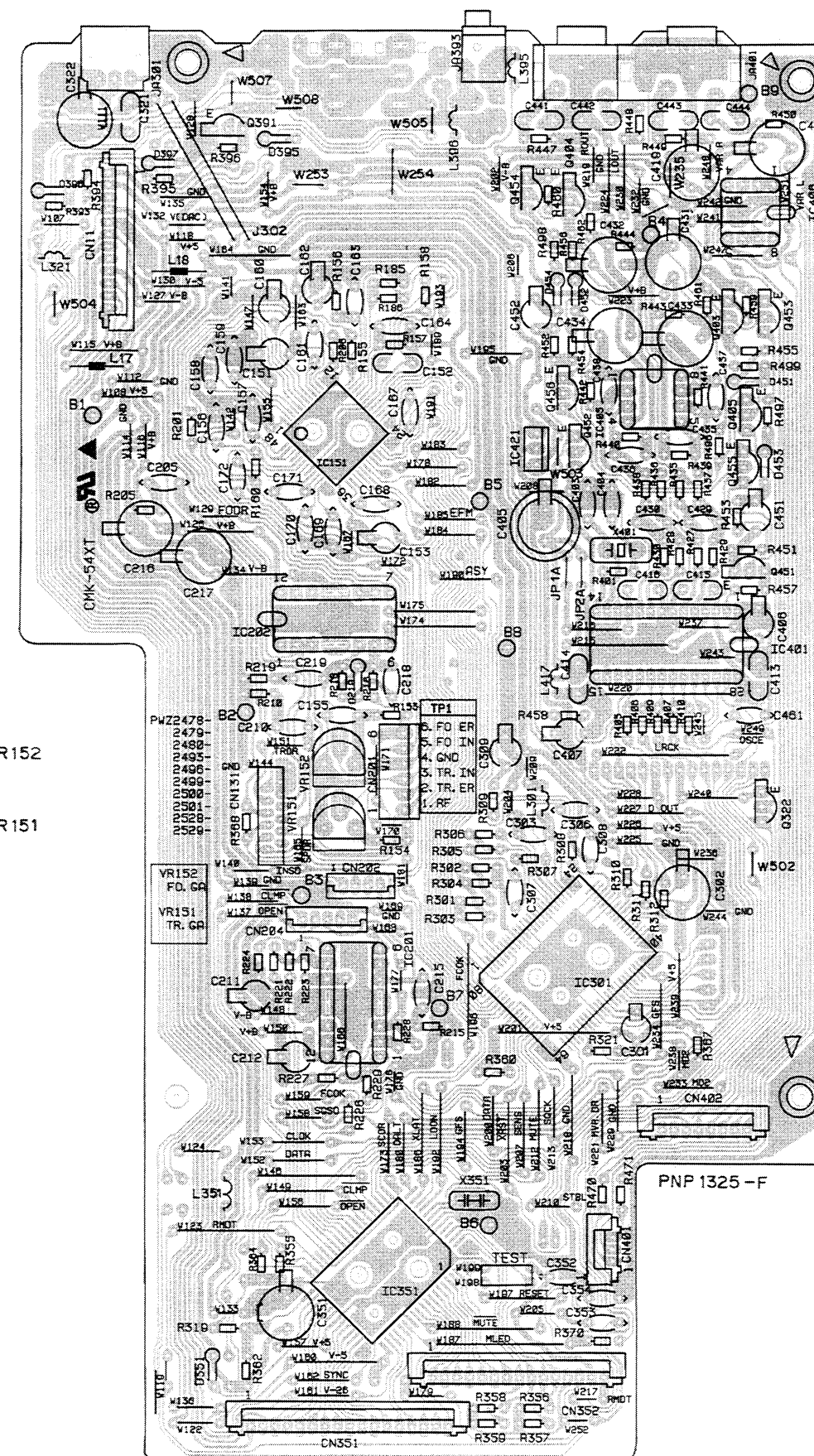
VR152

Q322

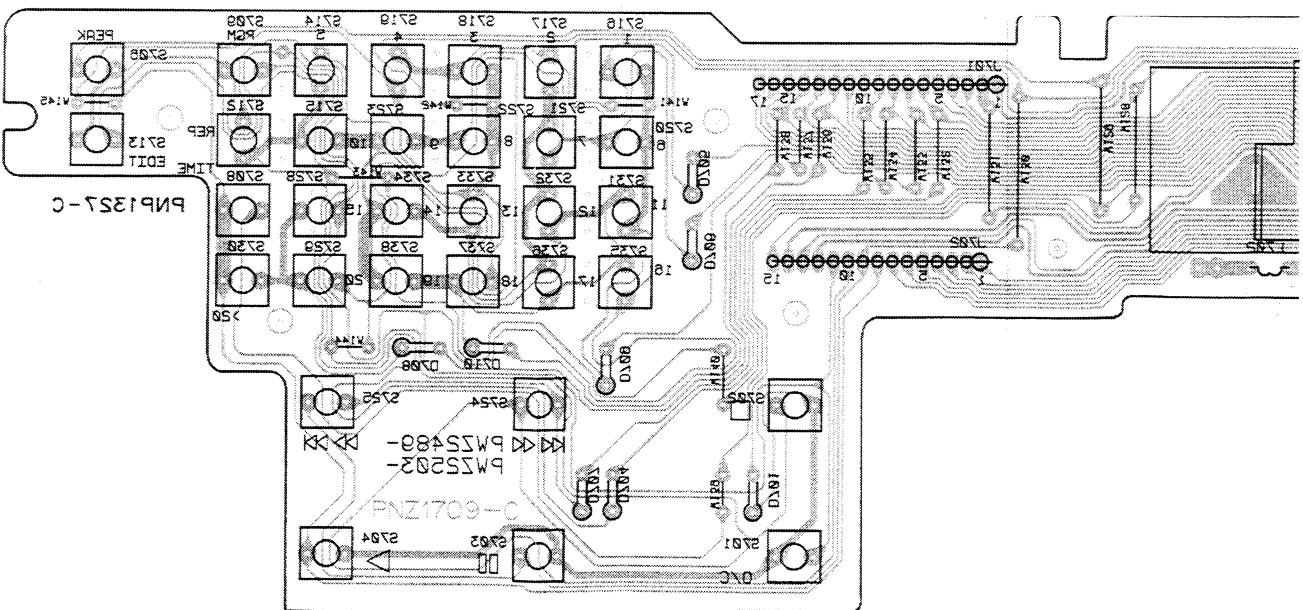
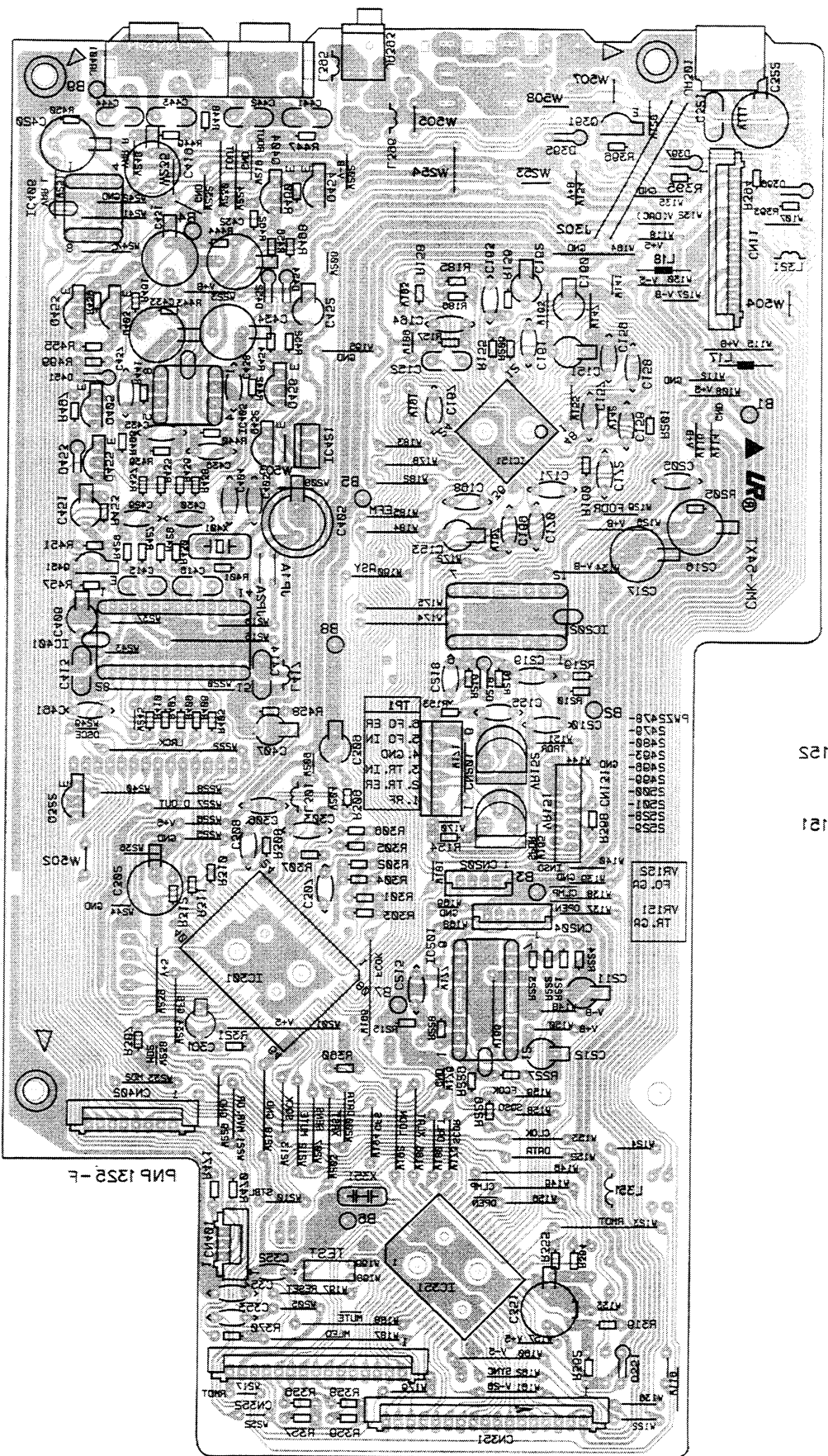
VR151

IC301  
IC201

IC351



MAIN BOARD ASSY



10451 10452 10453 10454 10455 10456 10457 10458 10459 10460 10461 10462 10463 10464 10465 10466 10467 10468 10469 10470 10471 10472 10473 10474 10475 10476 10477 10478 10479 10480 10481 10482 10483 10484 10485 10486 10487 10488 10489 10490 10491 10492 10493 10494 10495 10496 10497 10498 10499 10500 10501 10502 10503 10504 10505 10506 10507 10508 10509 10510 10511 10512 10513 10514 10515 10516 10517 10518 10519 10520 10521 10522 10523 10524 10525 10526 10527 10528 10529 10530 10531 10532 10533 10534 10535 10536 10537 10538 10539 10540 10541 10542 10543 10544 10545 10546 10547 10548 10549 10550 10551 10552 10553 10554 10555 10556 10557 10558 10559 10560 10561 10562 10563 10564 10565 10566 10567 10568 10569 10570 10571 10572 10573 10574 10575 10576 10577 10578 10579 10580 10581 10582 10583 10584 10585 10586 10587 10588 10589 10590 10591 10592 10593 10594 10595 10596 10597 10598 10599 10600 10601 10602 10603 10604 10605 10606 10607 10608 10609 10610 10611 10612 10613 10614 10615 10616 10617 10618 10619 10620 10621 10622 10623 10624 10625 10626 10627 10628 10629 10630 10631 10632 10633 10634 10635 10636 10637 10638 10639 10640 10641 10642 10643 10644 10645 10646 10647 10648 10649 10650 10651 10652 10653 10654 10655 10656 10657 10658 10659 10660 10661 10662 10663 10664 10665 10666 10667 10668 10669 10670 10671 10672 10673 10674 10675 10676 10677 10678 10679 10680 10681 10682 10683 10684 10685 10686 10687 10688 10689 10690 10691 10692 10693 10694 10695 10696 10697 10698 10699 10700 10701 10702 10703 10704 10705 10706 10707 10708 10709 10710 10711 10712 10713 10714 10715 10716 10717 10718 10719 10720 10721 10722 10723 10724 10725 10726 10727 10728 10729 10730 10731 10732 10733 10734 10735 10736 10737 10738 10739 10740 10741 10742 10743 10744 10745 10746 10747 10748 10749 10750 10751 10752 10753 10754 10755 10756 10757 10758 10759 10760 10761 10762 10763 10764 10765 10766 10767 10768 10769 10770 10771 10772 10773 10774 10775 10776 10777 10778 10779 10780 10781 10782 10783 10784 10785 10786 10787 10788 10789 10790 10791 10792 10793 10794 10795 10796 10797 10798 10799 10800 10801 10802 10803 10804 10805 10806 10807 10808 10809 10810 10811 10812 10813 10814 10815 10816 10817 10818 10819 10820 10821 10822 10823 10824 10825 10826 10827 10828 10829 10830 10831 10832 10833 10834 10835 10836 10837 10838 10839 10840 10841 10842 10843 10844 10845 10846 10847 10848 10849 10850 10851 10852 10853 10854 10855 10856 10857 10858 10859 10860 10861 10862 10863 10864 10865 10866 10867 10868 10869 10870 10871 10872 10873 10874 10875 10876 10877 10878 10879 10880 10881 10882 10883 10884 10885 10886 10887 10888 10889 10890 10891 10892 10893 10894 10895 10896 10897 10898 10899 10900 10901 10902 10903 10904 10905 10906 10907 10908 10909 10910 10911 10912 10913 10914 10915 10916 10917 10918 10919 10920 10921 10922 10923 10924 10925 10926 10927 10928 10929 10930 10931 10932 10933 10934 10935 10936 10937 10938 10939 10940 10941 10942 10943 10944 10945 10946 10947 10948 10949 10950 10951 10952 10953 10954 10955 10956 10957 10958 10959 10960 10961 10962 10963 10964 10965 10966 10967 10968 10969 10970 10971 10972 10973 10974 10975 10976 10977 10978 10979 10980 10981 10982 10983 10984 10985 10986 10987 10988 10989 10990 10991 10992 10993 10994 10995 10996 10997 10998 10999 11000 11001 11002 11003 11004 11005 11006 11007 11008 11009 11010 11011 11012 11013 11014 11015 11016 11017 11018 11019 11020 11021 11022 11023 11024 11025 11026 11027 11028 11029 11030 11031 11032 11033 11034 11035 11036 11037 11038 11039 11040 11041 11042 11043 11044 11045 11046 11047 11048 11049 11050 11051 11052 11053 11054 11055 11056 11057 11058 11059 11060 11061 11062 11063 11064 11065 11066 11067 11068 11069 11070 11071 11072 11073 11074 11075 11076 11077 11078 11079 11080 11081 11082 11083 11084 11085 11086 11087 11088 11089 11090 11091 11092 11093 11094 11095 11096 11097 11098 11099 11100 11101 11102 11103 11104 11105 11106 11107 11108 11109 11110 11111 11112 11113 11114 11115 11116 11117 11118 11119 11120 11121 11122 11123 11124 11125 11126 11127 11128 11129 11130 11131 11132 11

10401 50501

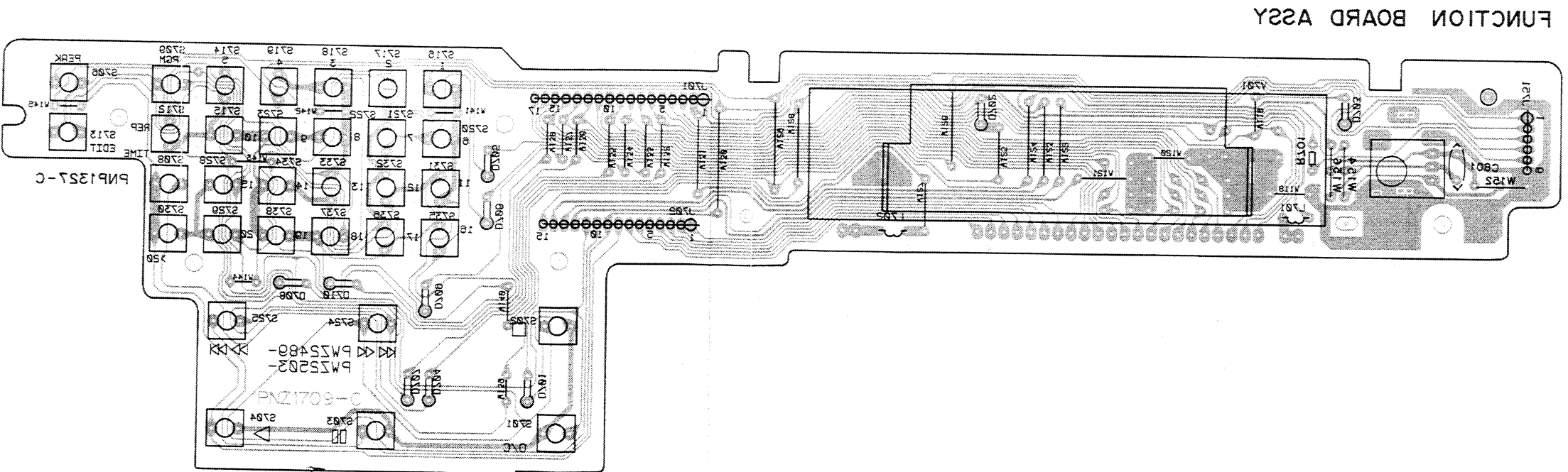
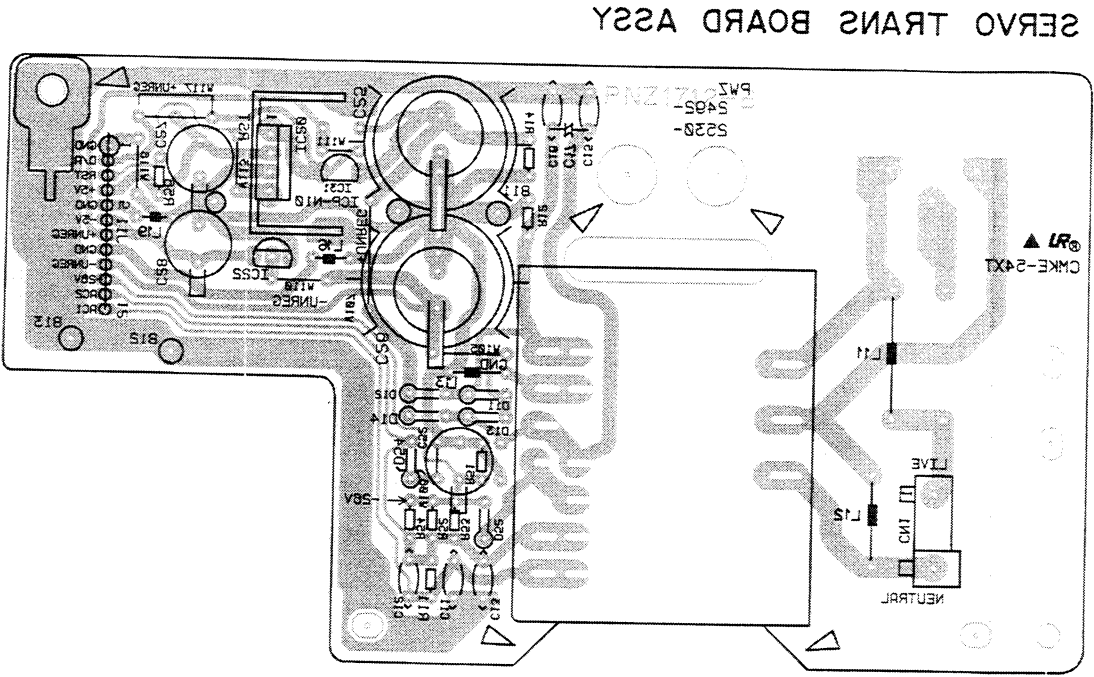
Q355

IC501

15321

# 4. PCB DIAGRAM

• This diagram is viewed from the foil side.



0391  
0424  
0404  
IC406  
0423  
0403  
0426  
IC402  
0402  
IC451  
0425  
0422  
0421  
IC505 IC401

0355

IC301  
IC301

IC321